SAGI RAMAKRISHNAM RAJU ENGINEERING COLLEGE (A)

China Amiram, Bhimavaram, Andhra Pradesh- 534204

Board of Studies Meetings

INDEX

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE(A)
CHINNA AMIRAM :: BHIMAVARAM-534204
DEPARTMENT OF CIVIL ENGINEERING

Dt: 16-11-2020

CIRCULAR

This is to inform you that the Department of Civil Engineering will convene a meeting on 29-11-2020 at 11.00 AM in Room No. R105(HOD Office) virtually using zoom platform. In this connection, all the Board of Studies members are requested to attend the same.

Agenda:

1. Discussion and finalization of course structure and syllabus of ¼ B. Tech under R20 regulations.
2. Approval of syllabus of first year and discussions regarding the course structure for four years.
3. Any other concerns with the permission of the Chair.

HEAD
Dept. of Civil Engg.
S.R.K.R. Engg. College
CHINA AMIRAM
BHIMAVARAM-534 204.

Head of the Department

HEAD
Dept. of Civil Engg.
S.R.K.R. Engg. College
CHINA AMIRAM
BHIMAVARAM-534 204.

C.C to:
1. The Members of Board of studies
2. Office file

PRINCIPAL
S.R.K.R. Engg. College
BHIMAVARAM-534 204.

SAGI RAMA KRISNAM RAJU ENGINEERING COLLEGE
(AUTONOMOUS)

BOARD OF STUDIES MEETING

Date: 29th November 2020

The Board of Studies meeting is conducted in virtual mode (using zoom platform) was held on 29-11-2020 at 11.00 A.M. to discuss the following items:

AGENDA

1) Discussion and finalization of course structure and syllabus of 1/4 B.Tech(Civil) under R20 regulations
2) Approval of syllabus for first year and discussions regarding the course structure for four years
3) Any other item with the permission of the Chair.

HEAD
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S.R.K.R. Engg. College
CHINA AMIRAM
BHIMAVARAM-534 204.

PRINCIPAL
S.R.K.R. Engg. College
BHIMAVARAM-534 204.

MINUTES OF THE MEETING

1. Resolved to offer engineering workshop for civil engineering in the first semester under R20 regulation
2. Resolved to offer engineering drawing course in the first semester and also finalized the syllabus for it
3. Discussed regarding courses related to Honours and Minors in R20 regulation
4. Discussions were made on the courses to include in R20 regulation for all the years
5. Resolved to include Engineering mechanics in the second semester and also discussed the syllabus
6. Discussed regarding the curriculum feedbacks collected from various stakeholders and recommended to academic council.
7. Concluded the meeting with the importance of software tools and its relation to curriculum.

M. Jagapathi Raju

PRINCIPAL
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HEAD
Dept. of Civil Engg.
S.R.K.R. Engg. College
CHINA AMIRAM
BHIMAVARAM-534 204.

RESOLUTIONS FOR THE MEETING DATED 29-11-2020

1. Resolved to offer engineering workshop for civil engineering in the first semester under R20 regulation
2. Resolved to offer engineering drawing course in the first semester and also finalized the syllabus for it

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UG Programmes CE, CSE, ECE, EEE, IT & ME are Accredited by NBA
ChinnaAmiram, Bhimavaram-534204. (AP)
Estd:1980

Regulation: R20			I / IV - B. Tech. I - Semester						
CIVIL ENGINEERING **(under Choice Based Credit System / Elective Course System)** **SCHEME OF INSTRUCTION &EXAMINATION** (With effect from 2020-21 admitted Batch onwards)									
Course Code	**Course Name**	**Category**	**Cr.**	**L**	**T**	**P**	**Int. Marks**	**Ext. Marks**	**Total Marks**
B20 HS1101	English	HS	3	3	0	0	30	70	100
B20 BS1101	Mathematics-I	BS	3	3	0	0	30	70	100
B20 BS1102	Applied Physics	BS	3	3	0	0	30	70	100
B20 ME1101	Engineering Drawing	ES	3	2	0	0	30	70	100
B20 CE1101	Engineering Geology	ES	3	3	0	0	30	70	100
B20 CE1102	Engineering Geology Lab	ES	1.5	0	0	3	15	35	50
B20 BS1107	Applied Physics Lab	BS	1.5	0	0	3	15	35	50
B20 CE1103	Basics of Civil Engineering Workshop	ES	1.5	0	0	3	15	35	50
TOTAL			**19.5**	**14**	**0**	**9**	**195**	**455**	**650**

3. Discussed regarding courses related to Honours and Minors in R20 regulation
4. Discussions were made on the courses to include in R20 regulation for all the years
5. Resolved to include Engineering mechanics in the second semester and also discussed the syllabus

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Course Outcomes for First Year First Semester Course	
Course Code: B20CE1103	
Course Title: BASICS OF CIVIL ENGINEERING WORK SHOP	
CO-1	Identify various components of a building and give lump-sum estimate
CO-2	Determine distances and irregular areas using conventional survey instruments like chain, tape and cross- staff.
CO-3	Identify different soils
CO-4	Determine centre of gravity and moment of inertia of channel and I-sections
CO-5	Prepare a single room building plan as per the building bye laws
CO-6	Select simple sanitary fitting
CO-7	Illustrate the process of making cement mortar / concrete for nominal mix

Regulation: R20			I / IV - B.Tech. II - Semester						
CIVIL ENGINEERING (under Choice Based Credit System / Elective Course System)									
SCHEME OF INSTRUCTION &EXAMINATION (With effect from 2020-21 admitted Batch onwards)									
Course Code	Course Name	Category	Cr.	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 BS1201	Mathematics-II	BS	3	3	0	0	30	70	100
B20 BS1203	Applied Chemistry	BS	3	3	0	0	30	70	100
B20 CS1201	Programming for Problem Solving Using C	ES	3	3	0	0	30	70	100
B20 CE1201	Engineering Mechanics	ES	3	3	0	0	30	70	100
B20 CE1202	Building Materials and Concrete Technology	ES	3	3	0	0	30	70	100
B20 BS1208	Applied Chemistry Lab	BS	1.5	0	0	3	15	35	50
B20 HS1202	Communication Skills Lab	HS	1.5	0	0	3	15	35	50
B20 CS1205	Programming for Problem Solving Using C Lab	ES	1.5	0	0	3	15	35	50
B20 MC1201	Environmental Science	MC	0	2	0	0	--	--	--
B20 MC1203	National Service Scheme (NSS)	MC	0	0	0	2	--	--	--
TOTAL			19.5	17	0	11	195	455	650

6. Discussed regarding the curriculum feedbacks collected from various stakeholders and recommended to academic council.

7. Concluded the meeting with the importance of software tools and its relation to curriculum.

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HEAD
Dept. of Civil Engg.
S.R.K.R. Engg. College

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
CHINNA AMIRAM:: BHIMAVARAM-534204
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Dt: 25-11-2020

CIRCULAR

This is to inform you that the Board of Studies (UG) meeting of the department of Computer Science & Engineering will be held on 29-11-2020 at 11.00 A.M. in virtual mode using Zoom platform with the following agenda. In this connection, all the Board of Studies members are requested to attend the same.

Agenda:

1. To finalize R20 first year scheme of instruction, syllabus and second year course structure
2. Any other topic with the permission of the chair

Head of the Department

Head of the Department of
Computer Science & Engineering
S.R.K.R. Engineering College
BHIMAVARAM-534 204, A.P. INDIA

C.C to:
1. The Members of the Board of Studies
2. Office file

PRINCIPAL
S.R.K.R. Engg. College
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SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE(A)

(AFFILIATED TO JNTUK, Kakinada&Recognized by A.I.C.T.E. Govt. of India)
(Accredited by N.B.A., A.I.C.T.E., New Delhi)
China Amiram, **BHIMAVARAM**, W.G. Dist., A.P., INDIA:Pin: 534204

DEPARTMENT OF COMPUTERSCIENCE ANDENGINEERING

Dr. V. Chandra Sekhar ,Ph.D
Associate Professor & Head

Dept: +91-8816-223332,EXT.213
Phone: +91-9440351652
Email:cse@srkrec.ac.in

29-11-2020

Board of Studies Meeting

A Meeting of Board of Studies of department of Computer Science and Engineering is held on 29th November 2020 in virtual mode with the following points of agenda.

Agenda

1. To finalize R20 first year scheme of instructions, syllabus and second year course structure

2. Any other topic with the permission of the chair

Members Present

S. No	Category	Name of the Member	Position	Phone No	Mail ID
1	Chairman	Dr. V Chandra Sekhar	Associate Professor & HOD Dept. of CSE, SRKREC	9440351652	dr.vcs@srkrec.ac.in
2	JNTUK Nominee	Dr. O. Srinivasa Rao	Professor, Dept. of CSE, University College of Engineering Kakinada (UCEK), JNTU Kakinada .	9441951718	osr_phd@yahoo.com
3	Experts from Other Universities	Dr. S. Viswanadha Raju	Professor Dept. of CSE, Vice Principal, JNTUH College of Engineering Jagtial , Nachupally (Kondagattu), KodimialMandal,JagtialDist.Telangana - 505501	9963701506	svraju.jntu@gmail.com viswanadha_raju2004@yahoo.co.in

H. Nagarjuna

Head of the Department
Computer Science & Engineering

4		Dr. Ka. Selvaradjo u	Professor Dept. of CSE, Pondicherry Engineering College Puducherry - 605 014	09444684258	selvaraj@pec.edu
5	Industry Expert	Sri. Ramesh Paturi	Director, Business Acceleration Service, Microsoft Services	9004099488	paturir@gmail.com
6	Expert from Research Organizati on	Smt. VaniVeges na	Scientist 'G' Aeronautical Development Agency (ADA), Bangalore	9880926321	vegesna_vani@yahoo .com
9	Faculty of each Specializa tion	Dr. M S V S B Raju	Professor, Dept. of CSE, SRKREC	9848433131	msramaraju@gmail.c om
10		Dr. V Krishnamra juKalidindi	Associate Professor Dept. of CSE, SRKREC	9948771117	kvkraju.srkr@gmail.c om
11		Dr. Mahesh Gadiraju	Associate Professor Dept. of CSE, SRKREC	9493671967	gadirajumahesh@gm ail.com
12		Dr. N K Kamesh	Associate Professor Dept. of CSE, SRKREC	7382571555	nkkamesh@gmail.co m
13		Dr. R N V Jagan Mohan	Associate Professor Dept. of CSE, SRKREC	7981349543	mohanrnvj@gmail.co m
14		Dr. K S R Radhika	Associate Professor Dept. of CSE, SRKREC	9848093663	ksrradhika@srkrec.ac .in

Discussion

All panel members thoroughly discussed on the course structure and many of the members suggested to try to incorporate skill-oriented courses in the curriculum.

Resolution

1. All the members discussed on various course structures along with the course structure given by JNTUK and proposed scheme of instructions for first, second year of R20 regulation and accepted the JNTUK course structure with some changes

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(Dr V Chandra Sekhar)
Chairman- Board of Studies
Head – Department of CSE

Head of the Department
Computer Sceince & Engineering
S.R.K.R.Engineering College
BHIMAVARAM-534 204, A.P., INDIA

ANNEXURE-1

With reference to Board of Studies meeting dated 29-11-2020,

Resolution 1: All the members discussed various course structures along with the course structure given by JNTUK and the proposed scheme of instructions for first, and second year of R20 regulation and accepted the JNTUK course structure with some changes

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Regulation: R20		I / IV - B.Tech. I - Semester							
COMPUTER SCIENCE & ENGINEERING									
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2020-21 admitted Batch onwards)									
Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 HS 1101	English	HS	3	3	0	0	30	70	100
B20 BS 1101	Mathematics-I	BS	3	3	0	0	30	70	100
B20 BS 1103	Applied Chemistry	BS	3	3	0	0	30	70	100
~~B20 CS 1101~~	~~Programming for Problem Solving Using C~~	ES	3	3	0	0	30	70	100
~~B20 CS 1102~~	~~Computer Fundamentals and Digital Logic~~	ES	3	3	0	0	30	70	100
B20 CS 1103	Programming for Problem Solving Using C Lab	ES	1.5	0	0	3	15	35	50
B20 BS 1108	Applied Chemistry Lab	BS	1.5	0	0	3	15	35	50
~~B20 CS 1104~~	~~Computer Engineering Workshop~~	ES	1.5	0	0	3	15	35	50
TOTAL			19.5	15	0	9	195	455	650

Head of the Department of Computer Science & Engineering, S.R.K.R. Engineering College, Chinna Amiram, Bhimavaram-534 204, A.P., INDIA

*Subjects highlighted in green colour are newly added subjects and subjects highlighted in yellow colour are revised subjects

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Regulation: R20	I / IV - B.Tech. II - Semester

COMPUTER SCIENCE & ENGINEERING

SCHEME OF INSTRUCTION & EXAMINATION
(With effect from 2020-21 admitted Batch onwards)

Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 BS 1201	Mathematics-II	BS	3	3	0	0	30	70	100
B20 BS 1202	Applied Physics	BS	3	3	0	0	30	70	100
B20 BS 1204	Mathematical Foundations of Computer Science	ES	3	3	0	0	30	70	100
B20 CS 1202	Computer Organization	ES	3	3	0	0	30	70	100
B20 CS 1203	Data Structures	ES	3	3	0	0	30	70	100
B20 BS 1207	Applied Physics Lab	BS	1.5	0	0	3	15	35	50
B20 HS 1202	Communication Skills Lab	HS	1.5	0	0	3	15	35	50
B20 CS 1206	Data Structures Lab	ES	1.5	0	0	3	15	35	50
B20 MC 1202	Professional Ethics and Human Values	MC	0	2	0	0	--	--	--
B20 MC 1203	National Service Scheme (NSS)	MC	0	0	0	2	--	--	--
	TOTAL		**19.5**	**17**	**0**	**11**	**195**	**455**	**650**

Head of the Department of Computer Science & Engineering S.R.K.R. Engineering College Bhimavaram 534 204, A.P., INDIA

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BHIMAVARAM-534 204.

Regulation: R20		II / IV - B.Tech. I - Semester							
COMPUTER SCIENCE & ENGINEERING									
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2020-21 admitted Batch onwards)									
Course Code	**Course Name**	**Category**	**Cr**	**L**	**T**	**P**	**Int. Marks**	**Ext. Marks**	**Total Marks**
B20 BS 2101	Numerical Methods & Vector Calculus	BS	3	3	0	0	30	70	100
B20 CS 2101	Object Oriented Programming through C++	PC	3	3	0	0	30	70	100
B20 CS 2102	Software Engineering	PC	3	3	0	0	30	70	100
B20 CS 2103	Operating Systems	PC	3	3	0	0	30	70	100
B20 CS 2104	Python Programming	PC	3	3	0	0	30	70	100
B20 CS 2105	Object Oriented Programming Lab	PC	1.5	0	0	3	15	35	50
B20 CS 2106	Python Programming Lab	PC	1.5	0	0	3	15	35	50
B20 CS 2107	Operating Systems Lab	PC	1.5	0	0	3	15	35	50
B20 CS 2108	Web Application Development Using Full Stack	SOC	2	0	0	4	--	50	50
B20 MC 2101	Environmental Science	MC	0	2	0	0	--	--	--
B20 MC 2103	English Proficiency	MC	0	2	0	0	--	--	--
		TOTAL	**21.5**	**19**	**0**	13	195	505	**700**

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Regulation: R20	II / IV - B.Tech. II - Semester

COMPUTER SCIENCE & ENGINEERING

SCHEME OF INSTRUCTION & EXAMINATION
(With effect from 2020-21 admitted Batch onwards)

Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 BS 2201	Probability and Statistics	BS	3	3	0	0	30	70	100
B20 CS 2201	Data Base Management Systems	PC	3	3	0	0	30	70	100
B20 CS 2202	Design and Analysis of Algorithms	PC	3	3	0	0	30	70	100
B20 CS 2203	Java Programming	ES	3	3	0	0	30	70	100
B20 HS 2201	Managerial Economics and Financial Accountancy	HS	3	3	0	0	30	70	100
B20 CS 2204	Data Base Management Systems Lab	PC	1.5	0	0	3	15	35	50
B20 CS 2205	R Programming Lab	PC	1.5	0	0	3	15	35	50
B20 CS 2206	Java Programming Lab	ES	1.5	0	0	3	15	35	50
B20 CS 2207	Applications of Python using Numpy and Pandas	SOC	2	0	0	4	--	50	50
	TOTAL		**21.5**	**15**	**0**	**13**	**195**	**505**	**700**

Head of the Department of Computer Science & Engineering
S.R.K.R. Engineering College
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SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (AUTONOMOUS)
(Affiliated to JNTU Kakinada)
Department of ECE

BOARD OF STUDIES MEETING (Online Zoom meeting)
on 25-09-2021 (Sat) at 02:30 PM

AGENDA

1) Approval of the Scheme & Syllabus for B.Tech (ECE) R-20 II year.
2) Approval of the Scheme and Syllabus of B.Tech (ECE) R-19 III year

Signature Form

S. No	Name of the Member	Signature
1	**Dr. B.V.S.S.N. Raju** Professor & Head, Dept. of ECE SRKR Engineering College	
2	**Dr. B. T. Krishna** Professor & HOD, Dept. of ECE, University College of Engineering Kakinada (UCEK), JNTU Kakinada	
3	**Dr. A. Mallikarjuna Prasad** Professor, Department of ECE University College of Engineering Kakinada, JNTUK, Kakinada-533003.	
4	**Sri SVN Narayana Rao** CEO, Salcit Technologies Pvt. Ltd., Flat No. 2408, Sai Dream Castle, Nizampet, Hyderabad-500090	
5	**Prof. D.V.R. Mohan,** Professor, Dept. of ECE, SRKR Engineering College	
6	**Prof. P. Subba Rao** Professor, Dept. of ECE SRKR Engineering College	
7	**Dr. P.V. Rama Raju** Professor, Dept. of ECE SRKR Engineering College	
8	**Prof. G.V.S.Padma Rao** Professor, Dept. of ECE	

	SRKR Engineering College	
9	**Dr. K.V.S.N. Raju** Professor, Dept. of ECE SRKR Engineering College	
10	**Prof. N. Venkateswara Rao** Professor, Dept. of ECE SRKR Engineering College	
11	**Sri M. Vijaya Rama Raju** Associate Professor, Dept. of ECE SRKR Engineering College	
12	**Dr. S.S. Mohan Reddy** Associate Professor, Dept. of ECE SRKR Engineering College	
13	**Sri Y. Rama Lakshmanna** Associate Professor, Dept. of ECE SRKR Engineering College	

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SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JNTU Kakinada)

Department of ECE

BOARD OF STUDIES MEETING (Online Zoom meeting)
on 25-09-2021 (Sat) at 02:30 PM

AGENDA

1) Approval of the Scheme & Syllabus for B.Tech (ECE) R-20 II year.
2) Approval of the Scheme and Syllabus of B.Tech (ECE) R-19 III year

Comments & observations in BOS meeting (25/09/2021)

BoS meeting Resolutions

	Overall Comments		
sno	**Observations/Comments**	**Subject Expert**	**Resolution/Action**
1	• IPR limits to 2hrs • Shift Bio medical Signal processing to PE-IV • Shift Speech Signal processing to PE-III • Skill Oriented: Instruments and Measurements • LICPC: 2tb preferred. Remove Microelectronics. • Remove python programming in SCT & PP • Skill oriented : HFSS, any antenna related software, patch chords, VNA • LDIC: extend 3rd chapter and restructure 5th chapter • Include Minor specialization and honors syllabus for at least 2 subjects	Dr.A.Mallikarjuna Prasad	Considered. Shifted to PE-IV Shifted to PE-III Will be consider later Microelectronics Removed python programming Removed Will be consider later LDIC syllabus re arranged with 5th chapter Included Minors & Honors in R20

H. Jagapathi Raju

2	• Optical and satellite shift to PE – III • Wireless Mobile Communications shift to PE –IV • Add Digital Control Systems in syllabus • MPMC syllabus is vast. Try to re structure • Include SK Mitra in DSP	Dr. B.T. Krishna	Added to PE-III Added to PE-III Will be consider later Restructured with slight changes Added
3	• Remove PP In Soft Computing Techniques & Python Programming • Smart Sensors- design oriented will be good and useful • Open elective –Web Technologies • Skill Oriented: ML Lab (Application of ML) in 4-1 • Advanced coding- Java • Skill course on Design verification • Testing and testability • Add System C skill oriented course	Sri S V N Narayana Rao	Removed in the syllabus Added in professional elective Introduced in R-19 Curriculum Will be consider later Will be consider later Will be consider later Introduced in R 20 honors Will be consider later

* All Subject-wise comments have been considered.

** Subject teachers were asked to take the suggestions into account & accordingly some changes were made.

***

PRINCIPAL
S.R.K.R. Engg. College
BHIMAVARAM-534 204.

Signatures of External Members attended:

(1) Dr. B.T. Krishna, Professor of ECE & HOD, UCEK, JNTU Kakinada

x B. T. Krishna

(2) Dr. A. Mallikarjuna Prasad, Professor of ECE, UCEK, JNTU Kakinada

A. M. Prasad

(3) Sri S V N Narayana Rao, CEO, Salcit Technologies Pvt. Ltd., Nizampet, Hyderabad-500 090

x

M. Jagapathi Raju

PRINCIPAL
S.R.K.R. Engg. College
BHIMAVARAM-534 204.

MEETING-1

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE(A)
CHINNA AMIRAM :: BHIMAVARAM534204
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Dt:13-07-2020

CIRCULAR

This is to inform you that the Department of Electrical And Electronics Engineering will hold a meeting on 15-07-20 at 10.00A.M by online mode and the meeting link will be provided. In this connection, all the members of Board of studies are requested to attend the same.

Agenda:

1) To discuss and finalize schemes for B.Tech (R19) 2nd , 3rd & 4th years .
2) To discuss and finalize syllabus for B.Tech (R19) 2nd year.
3) To discuss and finalize Scheme and syllabus for B.Tech (R17) 4th year.
4) Any other items for discussion with permission of the chair.

Head of the Department

Head of EEE Department
S.R.K.R. Engg. College
BHIMAVARAM-534 204.

C.C to

1.The members of Board of Studies

2.Office file

S.R.K.R. ENGINEERING COLLEGE * DEPT. OF E.E.E. * BHIMAVARAM-534 204.

PRINCIPAL
S.R.K.R. Engg. College
BHIMAVARAM-534 204.

ESTD: 1980

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CHINNA AMIRAM (P.O):: BHIMAVARAM :: W.G.Dt., A.P., INDIA :: PIN: 534 204

Date:15-07-2020

Members of Board of Studies

S.NO	category	NAME	DESIGNATION	SIGNATURE
1	Chairman	Dr. P Kanta Rao	Prof &Head SRKREC	
2	JNTUK Nominee	Dr.K.Venkata Reddy	Associate Professor,UCEK,JNTUK	Not present
3	Expert from other university	Dr.M.Damodar Reddy	Professor Department of Electrical Engineering S.V.University,Tirupati	Not present
4	Expert from other university	Dr.Ch.V.V.S Bhaskara Reddy	Professor, Department of Electrical Engineering,AU,Visakapatnam	Not present
5	Expert from other university	Dr.P Sankar	Assistant Professor,Department of Electrical Engineering NIT Andhra Pradesh	Not present
6	Industry expert	Dr. Ch.Chandra Shekhar	Project Manager, Hyundai Mobis Ind,Ltd,Hyderabad	Not present
7	Industry expert	Dr. P. Prabhakar Rao	Engineering Supervisor,Caterpillar India Pvt Ltd	Not present
8	Expert from Research organization	Dr.G.K.Vishwanadha Raju	Lead Engineer,G.E, Bengaluru	Not present
9	Faculty of each specialization	Dr.B.R.K.Varma	Professor, SRKREC	
10		Sri N. Srinivasu	Professor, SRKREC	
11		Dr.M.Sai Veerraju	Professor, SRKREC	
12		Sri.D.J.V Prasad	Associate Professor, SRKREC	D.J.V. Prasad 15/7/2020

Agenda:

1. **To discuss about Schemes for B.Tech (R19) 2nd, 3rd & 4th Years**
2. **To discuss about Syllabus for B.Tech (R19) 2nd Year**
3. **To discuss about Scheme and Syllabus for B.Tech (R17) 4th Year**
4. **Any other item with the permission of Chair.**

P. Jagapathi Raju

PRINCIPAL
S.R.K.R. Engg. College
BHIMAVARAM-534 204.

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Minutes of Meeting

A BOS meeting was held on 15-07-2020 for the B.Tech 2nd year (R19) & B.Tech 4th year (R17) Courses for EEE Department under JNTUK.

Minutes of Meeting

1. Finalized the Schemes for B.Tech (R19) 2nd, 3rd & 4th Years.
2. Suggested to change the contact hours of computers subjects to two theory and two practical classes per week.
3. Suggested to add the course IOT and its Application in 3rd year. And suggest to maintain uniform number of subjects to all electives.
4. Discussed about syllabus for B.Tech (R19) 2nd year.
5. Suggested to change Course outcomes for some of the subjects in B.Tech (R19) 2nd year.
6. Suggested to add some basic topic to machines-1 subject and change the order of units as Dc machines comes first instead of transformers.
7. Feedback from stockholders (students, alumni & parents) was discussed while framing the course curriculum and syllabus.
8. Discussed about Scheme and Syllabus for B.Tech (R17) 4th Year.
9. Suggested to remove DBMS course from Elective-1, instead of that add any advanced subject.
10. Suggested to change the titles of units in Electric drive courses and interchange the unit 3 and unit 4 in Electric Vehicles course.
11. Suggested to change the contents in FACTS, Power Station Practice and HVDC Transmission and asked to revise the syllabus.
12. Suggested to change the order of experiments in Power Electronics Lab based on the contents. And suggested to add fault analysis to power systems simulation lab.
13. Suggested to add some basic experiments to Power system Protection lab instead of equivalent circuit of Three phase transformer.
14. Discussed about syllabus of Networks Subject for B.Tech(R19) ECE 2nd year and suggested to add some basic concepts to unit 1 like basic elements and basic theorems.

S.R.K.R. ENGINEERING COLLEGE DEPT. OF E.E.E.

Chairman BOS

Head of EEE Department

RESOLUTIONS FOR THE MEETING DATED 15-07-2020

1) Finalised the schemes for B.Tech (R19) 2nd,3rd and 4th Years.

SCHEME OF INSTRUCTION & EXAMINATION
(Regulation R19)
II/IV B.TECH
I SEMESTER
(With effect from 2019 2020Admitted Batch onwards)

Subject Code	Name of the Subject	Category	Cr	L	T	P	Internal Marks	External Marks	Total Marks
B19 EC 2101	Electronic Devices and Circuits	ES	3	3	--	--	25	75	100
B19 BS2102	Mathematics-IV	BS	3	3	--	--	25	75	100
B19 EE 2101	Electrical Measurements and Instrumentation	PC	3	3	--	--	25	75	100
B19 EE 2102	Network Analysis and Synthesis	PC	3	3	--	--	25	75	100
B19 EE 2103	Electro Magnetic Field Theory	PC	3	3	--	--	25	75	100
B19 CS 2108	Data Structures	ES	3	3	--	--	25	75	100
B19 EE 2104	Networks Lab	PC	1.5	--	--	3	20	30	50
B19 EC 2105	Electronic Devices and Circuits Lab (with Simulation)	ES	1.5	--	--	3	20	30	50
B19 MC 2102	Essence of Indian Traditional Knowledge	MC	0	3	--	--	--	--	--
		TOTAL	21	21	0	6	190	510	700

SCHEME OF INSTRUCTION & EXAMINATION
(Regulation R19)
III/IV B.TECH
I-SEMESTER
(With effect from 2019-2020Admitted Batch onwards)

Subject Code	Name of the Subject	Category	Cr	L	T	P	Internal Marks	External Marks	Total Marks
B19 EE 3101	Electrical Machines-II	PC	3	3	--	--	25	75	100
B19 EE 3102	Control Systems	PC	3	3	--	--	25	75	100
B19 EE 3103	Power Electronics	PC	3	3	--	--	25	75	100
B19 EE 3104	Electrical Power Generation, Transmission & Distribution	PC	3	3	--	--	25	75	100
B19 EE 3105	Micro Processors and Micro Controllers	PC	3	3	--	--	25	75	100
# PE-I	Professional Elective-I	PE	3	3	--	--	25	75	100
B19 EE 3110	Electrical Machines-I Lab	PC	1.5	--	--	3	20	30	50
B19 EE 3111	Microprocessor & Microcontroller Lab	PC	1.5	--	--	3	20	30	50
B19 MC 3101	Employability skills-I	MC	--	3	--	--	--	--	--
B19 MC 3102	Basic Coding	MC	--	--	--	3	--	--	--
		TOTAL	21	21	--	9	190	510	700

SCHEME OF INSTRUCTION & EXAMINATION
(Regulation R19)
II/IV B.TECH
II SEMESTER
(With effect from 2019 2020Admitted Batch onwards)

Subject Code	Name of the Subject	Category	Cr	L	T	P	Internal Marks	External Marks	Total Marks
B19 EE 2201	Electrical Machines- I	PC	3	3	--	--	25	75	100
B19 EE 2202	Digital Electronics and Logic Design	PC	3	3	--	--	25	75	100
B19 EE 2203	Signals and Systems	PC	3	3	--	--	25	75	100
B19 ME 2207	Prime Movers and Pumps	ES	3	3	--	--	25	75	100
B19 CS 2209	OOPs through JAVA	ES	3	3	--	--	25	75	100
B19 HS 2201	Management and Organizational Behavior	HS	3	3	--	--	25	75	100
B19 EE 2204	Electrical Measurements and Instrumentation Lab	PC	1.5	--	--	3	20	30	50
B19 ME 2208	Thermal Prime movers Lab	ES	1.5	--	--	3	20	30	50
B19 MC 2202	Professional Ethics and Human Values	MC	0	3	--	--	--	--	--
		TOTAL	21	21	0	6	190	510	700

SCHEME OF INSTRUCTION & EXAMINATION
(Regulation R19)
III/IV B.TECH
II-SEMESTER
(With effect from 2019-2020Admitted Batch onwards)

Subject Code	Name of the Subject	Category	Cr	L	T	P	Internal Marks	External Marks	Total Marks
B19 EE 3201	Power System Analysis and Stability	PC	3	3	--	--	25	75	100
B19 EE 3202	Internet of Things and its applications in Electrical Engineering	PC	3	3	--	--	25	75	100
# PE-II	Professional Elective-II	PE	3	3	--	--	25	75	100
# PE-III	Professional Elective-III	PE	3	3	--	--	25	75	100
# OE-I	Open Elective-I	OE	3	3	--	--	25	75	100
B19 EE 3211	Electrical Machines - II Lab	PC	1.5	--	--	3	20	30	50
B19 EE 3212	Control Systems Lab	PC	1.5	--	--	3	20	30	50
B19 EE 3213	Power Electronics Lab	PC	1.5	--	--	3	20	30	50
B19 MC 3201	Employability skills-II	MC	0	3	--	--	--	--	--
B19 MC 3203	Advanced Coding	MC	--	--	--	3	--	--	--
		TOTAL	19.5	18	--	12	185	465	650

2) Suggested to change the con tact hours of computers subjects to 2 theory and 2 practical classes per week.

3) Suggested to add the course IOT and its applications in 3rd Year and suggested to maintain uniform number of subjects to all electives.

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Subject Code	Name of the Subject	Category	Cr	L	T	P	Internal Marks	External Marks	Total Marks
B19 EE 3201	Power System Analysis and Stability	PC	3	3	--	--	25	75	100
B19 EE 3202	Internet of Things and its applications in Electrical Engineering	PC	3	3	--	--	25	75	100
# PE-II	Professional Elective-II	PE	3	3	--	--	25	75	100
# PE-III	Professional Elective-III	PE	3	3	--	--	25	75	100
# OE-I	Open Elective-I	OE	3	3	--	--	25	75	100
B19 EE 3211	Electrical Machines - II Lab	PC	1.5	--	--	3	20	30	50
B19 EE 3212	Control Systems Lab	PC	1.5	--	--	3	20	30	50
B19 EE 3213	Power Electronics Lab	PC	1.5	--	--	3	20	30	50
B19 MC 3201	Employability skills-II	MC	0	3	--	--	--	--	--
B19 MC 3203	Advanced Coding	MC	--	--	--	3	--	--	--
		TOTAL	19.5	18	--	12	185	465	650

	Course Code	Course
#PE-II	B19 EE 3203	Advanced Control Systems
	B19 EE 3204	Digital Control systems
	B19 EE 3205	Special Electrical Machines
	B19 EE 3206	MOOCs-II
#PE-III	B19 EE 3207	Power Electronic Drives
	B19 EE 3208	Advanced power electronics Circuits
	B19 EE 3209	Switched Mode Power Supplies
	B19 EE 3210	MOOCs-III

	Course Code	Course
#OE-I	Student has to study one Open Elective offered by CE or CSE or ECE or IT or ME or EM&H	

4) Discussed about syllabus for B.Tech(R19) 2nd Year.

5) Suggested to change course outcomes for some of the subjects in B.Tech(R19) 2nd Year.

6) Suggested to add some basic topic to Machines-I subject and change the order of the units as DC Machines comes first instead of transformers.

SYLLABUS	
UNIT-I (10 Hrs)	**Electromechanical energy conversion:** Basic principles of energy, force and torque in singly and multiply excited systems. Construction and working principle of DC machines and methods of excitation.
UNIT-II (10 Hrs)	**D.C. Machines** D.C generators-emf equation, armature reaction, commutation. Compensating winding, characteristics of various types of generators, applications. D.C. motors- torque equation, D.C. shunt, series and compound motors– characteristics & applications
UNIT-III (10 Hrs)	**Starting &Speed control** Starting methods and speed control of D.C. shunt and series motors testing of D.C motors - direct and regenerative methods to test D.C. machines. Swinburne's test, field's test and separation of losses.
UNIT-IV (10 Hrs)	**Transformers:** Principle, construction and operation of single-phase transformers, phasor diagram, equivalent circuit, voltage regulation, losses and efficiency. Testing- open & short circuit tests, Sumpner"s test. Autotransformers- construction, principle, applications and comparison with two winding transformer.

7) Feedback from stakeholders (students, Alumni and parents) was discussed while framing the course curriculum and syllabus.

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8) Discussed about scheme and syllabus for B.Tech(R17) 4th Year

SCHEME OF INSTRUCTION & EXAMINATION
Regulation R17
IV/IV B.TECH
(With effect from 2017-2018 Admitted Batch onwards)
ELECTRICAL AND ELECTRONICS ENGINEERING
(Accredited by NBA)

I SEMESTER

Code No.	Name of the Subject	Credits	Lect Hrs	Tutorials / Hrs	Lab Hrs	Contact Hrs/ Week	Internal Marks	External Marks	Total Marks
R17 EE 4101	Electric Drives	3	3	1	-	4	30	70	100
R17 EE 4102	Power System Operation & Control	3	3	1	-	4	30	70	100
R17 EE 4103	Electric Vehicles	3	3	1	-	4	30	70	100
PELE-I	Elective-I	3	3	1	-	4	30	70	100
PELE-II	Elective-II	3	3	1	-	4	30	70	100
R17 EE 4104	Power Electronics Lab	2	-	-	3	3	50	50	100
R17 EE 4105	Power System Simulation Lab	2	-	-	3	3	50	50	100
	Total	19	15	5	6	26	250	450	700

PELE-I	R17 EE 4106	Operations Research
	R17 EE 4107	Flexible AC Transmission Systems
	R17 EE 4108	Integration of Distributed Generation
PELE-II	R17 EE 4109	High Voltage Engineering
	R17 EE 4110	Electric Power Quality
	R17 EE 4111	Energy Management & Auditing

SCHEME OF INSTRUCTION & EXAMINATION
Regulation R17
IV/IV B.TECH
(With effect from 2017-2018 Admitted Batch onwards)
ELECTRICAL AND ELECTRONICS ENGINEERING
(Accredited by NBA)
II SEMESTER

Code No.	Name of the Subject	Cr	Lect Hrs	Tut. Hrs	Lab Hrs	Contact Hrs/ Week	Int. Marks	Ext. Marks	Total Marks
R17 EE 4201	Electrical Machine Design	3	3	1	-	4	30	70	100
PELE-III	Elective-III	3	3	1	-	4	30	70	100
R17 EE 4205	Power System Protection Lab	2	-	-	3	3	50	50	100
R17 EE 4206	Seminar	2	-	-	-	-	50	-	50
R17 EE 4207	Project Work	11	-	-	3	3	50	150	200
	Total	21	6	2	6	14	210	340	550

PELE-III	R17 EE 4202	Electrical Distribution Systems
	R17 EE 4203	Utilization of Electrical Energy & Traction
	R17 EE 4204	HVDC Transmission

9) Suggested to remove DBMS course from elective-1. instead of that add any Advanced subject.

10) Suggested to change the title of units in electric drive courses and interchange the unit-3 and unit-4 in electrical vehicles course.

11) Suggested to change the contents in FACTS, Power station practice and HVDC Transmission and asked to revise the syllabus.

12) Suggested to change the order of experiments in power electronics lab based on the contents and suggested to add fault analysis to power sysstem simulation lab.

List of experiments:

1. Study the Characteristics of SCR, IGBT and MOSFET
2. Design of Gate Drive Circuit for IGBT & MOSFET
3. Compare the R and RC triggering circuit for various firing angle.
4. Construct a Single Phase Semi Converter for R and RL Loads.
5. Control the Speed of DC Motor Using Single Phase Full Converter with and without Free Wheeling Diode.
6. Construct a Single Phase AC Voltage Controller for R and RL Loads.
7. Study of Single Phase Cycloconverter for different frequency divisions.
8. Study of Impulse Commutated Chopper for various duty cycles.
9. Construct a single phase dual converter with and without circulating current mode of operation.
10. Study of Three Phase Inverter with 120° and 180° Mode of operation.

Add on Experiments:

1. Obtain the Three Level AC voltage from DC input using NPC Inverter.
2. Obtain the Five Level AC voltage from DC input using Cascaded Multi Level Inverter.
3. Study of Three Phase Full Converter with R-Load
4. Study of Three Phase Semi Converter with R-Load
5. Study of Three Phase AC Voltage Controller with R-Load
6. Study of Three Phase Sinusoidal PWM Inverter.

13) Suggested to add some basic experiments to power system protection lab instead of equivalent circuit of 3-phase transformer.

M. Jagapathi Raju

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S.R.K.R. Engg. College

List of experiments

1. Obtain positive, negative and zero sequence impedances of a 3-phase transformer.
2. Obtain the sequence impedance of alternator by fault analysis.
3. Obtain power angle characteristics of a salient pole synchronous machine by knowing direct and quadrature axis reactance.
4. Determine the dielectric strength of insulating oil.
5. Obtain the equivalent circuit of a 3-winding transformer.
6. Obtain the ABCD parameters of transmission line.
7. To plot the IDMT characteristics of electromagnetic over current relay.
8. To plot the DMT and IDMT characteristics of static overvoltage and under voltage relays.
9. To test the operation of Differential relay for Protection of transformer.
10. To test the characteristics of Negative sequence current relay with phase reversal fault simulation.

14) Discussed about the syllabus of Networks subject for B.Tech(R19) ECE 2nd Year and suggested to add some basic concepts to unit-1 like basic elements and Basic Theorems.

SYLLABUS	
UNIT-I (9 Hrs)	**Network Theorems:** Review of Dc circuits, Superposition, Thevenin's, Norton's, Reciprocity, Max Power Transfer theorems.
UNIT-II (12 Hrs)	**DC transients:** Inductor, Capacitor, source free RL, RC and RLC response, Evaluation of Initial conditions, Application of unit-step function to RL, RC and RLC circuits, concepts of Natural, Forced and Complete response.
UNIT-III (10 Hrs)	**Analysis of AC Networks:** Review of ac circuits, Node and mesh analysis, Superposition, Thevenin's, Max Power Transfer theorems. **Resonance:** Series and parallel resonance, selectivity, band width and Quality factor, locus diagram.
UNIT-IV (10 Hrs)	**Two-port Networks :** Introduction, Z-parameters, Y-parameters, Transmission line parameters, h-parameters, Relationship between various parameters, series, parallel & cascade connection of two port networks.

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Head of EEE Department
S.R.K.R. Engg. College
BHIMAVARAM-534 204.

PRINCIPAL
S.R.K.R. Engg. College
BHIMAVARAM-534 204.

MEETING-2

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE(A)
CHINNA AMIRAM :: BHIMAVARAM 534204
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Dt:23.11.2020

CIRCULAR

This is to inform you that the Department of Electrical And Electronics Engineering will hold a meeting on 29-11-20 at 09.30A.M by online mode and the meeting link will be provided. In this connection, all the members of Board of studies are requested to attend the same.

Agenda:

1) To discuss and finalize schemes for B.Tech (R20) 1st , 2nd , 3rd & 4th years .
2) To discuss and finalize syllabus for B.Tech (R20) 1st year.
3) Any other items for discussion with permission of the chair.

Head of the Department

Head of EEE Department
S.R.K.R. Engg. College
BHIMAVARAM-534 204.

C.C to

1.The members of Board of Studies

2.Office file

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ESTD: 1980

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (AUTONOMOU
(Affiliated to JNTUK, Kakinada), (Recognised by AICTE, New Delhi)
Accredited by NAAC with 'A' Grade
Recognised as Scientific and Industrial Research Organisation
CHINNA AMIRAM (P.O):: BHIMAVARAM :: W.G.Dt., A.P., INDIA :: PIN: 534 204

Date: 29-11-2020

Members of Board of Studies

S.NO	category	NAME	DESIGNATION	SIGNATURE
1	Chairman	Dr. P Kanta Rao	Prof &Head SRKREC	
2	JNTUK Nominee	Dr.K.Venkata Reddy	Associate Professor, UCEK, JNTUK, Kakinada.	ON LINE
3	Expert from other university	Dr.M.Damodar Reddy	Professor, Department of Electrical Engineering S.V.University, Tirupati.	ON LINE
4	Expert from other university	Dr.Ch.V.V.S Bhaskara Reddy	Professor, Department of Electrical Engineering, Andhra University, Visakhapatnam.	ON LINE
5	Expert from other university	Dr.P Sankar	Assistant Professor, Department of Electrical Engineering, NIT Andhra Pradesh	ON LINE
6	Industry expert	Dr. Ch.Chandra Shekhar	Project Manager, Hyundai Mobis Ind,Ltd, Hyderabad	Not Present
7	Industry expert	Dr. P. Prabhakar Rao	Engineering Supervisor, Caterpillar India Pvt Ltd	Not Present
8	Expert from Research organization	Dr.G.K.Vishwanadha Raju	Lead Engineer, G.E, Bengaluru	Not Present
9	Faculty of each specialization	Dr.B.R.K.Varma	Professor, SRKREC	
10		Sri N. Srinivasu	Professor, SRKREC	
11		Dr.M.Sai Veerraju	Professor, SRKREC	
12		Sri.D.J.V Prasad	Associate Professor, SRKREC	

Agenda:

1. **To discuss about Scheme for B.Tech (R20) 1st, 2nd, 3rd & 4th Years**
2. **To discuss about Syllabus for B.Tech (R20) 1st Year**
3. **Any other item with the permission of Chair.**

P. Nagaraju

PRINCIPAL
S.R.K.R. Engg. College
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Minutes of Meeting

A BOS meeting was held on 29-11-2022 for the B.Tech 1st Year (R20) curriculam and subjects for first Year courses.

Minutes of Meeting

1. Discussed and Finalized the Scheme for B. Tech (R20) 1st, 2nd, 3rd & 4th Years.
2. Suggested to change the representation for Professional Elective Courses.
3. Discussed and Suggested to change some syllabus contents in Introduction to Electrical Systems course for EEE.
4. Suggested to add sensors to the Basic Electrical and Electronics Engineering Course for Mechanical.
5. Suggested to add Servo motors, sensors and activators to Basic Electrical Engineering course in the place of BLDC motors for ECE.
6. Discussed and Finalized the syllabus of Principles of Electrical Engineering Course for CS&BS.
7. Discussed and Finalized the syllabus for Principles of Electrical & Electronics Engineering course for AI&DS.

S.R.K.R. ENGINEERING COLLEGE ★ DEPT. OF E.E.E. ★ BHIMAVARAM-534 204

Chairman BOS 29/11/20

Head of EEE Department
S.R.K.R. Engg.College
BHIMAVARAM—534 204

M. Nagaraju Raju

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S.R.K.R. Engg. College
BHIMAVARAM-534 204.

RESOLUTIONS FOR THE MEETING DATED 29-11-2020

1) Discussed and finalised the schemes for B.Tech(R20) 1st,2nd Years.

Regulation: R20	I / IV - B.Tech. I - Semester							
ELECTRICAL & ELECTRONICS ENGINEERING								
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2020-21 admitted Batch onwards)								
Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 HS 1101	English	HS	3	3	0	0	30	70	100
B20 BS 1101	Mathematics-I	BS	3	3	0	0	30	70	100
B20 BS 1102	Applied Physics	BS	3	3	0	0	30	70	100
B20 ME 1101	Engineering Drawing	ES	3	2	0	2	30	70	100
B20 EE 1101	Introduction to Electrical Systems	ES	3	3	0	0	30	70	100
B20 EE 1104	Basic Electrical Systems Lab	ES	1.5	0	0	3	15	35	50
B20 BS 1107	Applied Physics Lab	BS	1.5	0	0	3	15	35	50
B20 ME 1102	Workshop Practice	ES	1.5	0	0	3	15	35	50
	TOTAL		19.5	14	0	11	195	455	650

Regulation: R20	II / IV - B.Tech. I - Semester							
ELECTRICAL & ELECTRONICS ENGINEERING								
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2020-21 admitted Batch onwards)								
Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 BS 2101	Numerical Methods & Vector Calculus	BS	3	3	0	0	30	70	100
B20 EC 2101	Electronic Devices and Circuits	PC	3	3	0	0	30	70	100
B20 EE 2101	Network Analysis	PC	3	3	0	0	30	70	100
B20 EE 2102	Electromagnetic Field Theory	PC	3	3	0	0	30	70	100
B20 EE 2103	Electrical Machines-I	PC	3	3	0	0	30	70	100
B20 EE 2104	Networks Laboratory	PC	1.5	0	0	3	15	35	50
B20 EE 2105	MATLAB Simulation Laboratory	PC	1.5	0	0	3	15	35	50
B20 EC 2105	Electronic Devices and Circuits Lab With Simulation	PC	1.5	0	0	3	15	35	50
B20 EE 2106	Solar Energy Systems Laboratory	SOC	2	0	0	4	--	50	50
B20 MC 2102	Professional Ethics and Human values	MC	0	2	0	0	--	--	--
	TOTAL		21.5	17	0	13	195	505	700

Regulation: R20	I / IV - B.Tech. II - Semester							
ELECTRICAL & ELECTRONICS ENGINEERING								
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2020-21 admitted Batch onwards)								
Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 BS 1201	Mathematics-II	BS	3	3	0	0	30	70	100
B20 BS 1203	Applied Chemistry	BS	3	3	0	0	30	70	100
B20 CS 1201	Programming for Problem Solving Using C	ES	3	3	0	0	30	70	100
B20 CS 1204	Digital Computer Fundamentals	ES	3	3	0	0	30	70	100
B20 ME 1204	Prime Movers and Pumps	ES	3	3	0	0	30	70	100
B20 BS 1208	Applied Chemistry Lab	BS	1.5	0	0	3	15	35	50
B20 HS 1202	Communication Skills Lab	HS	1.5	0	0	3	15	35	50
B20 CS 1205	Programming for Problem Solving Using C Lab	ES	1.5	0	0	3	15	35	50
B20 MC 1201	Environmental Science	MC	0	2	0	0	--	--	--
B20 MC 1203	National Service Scheme (NSS)	MC	0	0	0	2	--	--	--
	TOTAL		19.5	17	0	11	195	455	650

Regulation: R20	II / IV - B.Tech. II - Semester							
ELECTRICAL & ELECTRONICS ENGINEERING								
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2020-21 admitted Batch onwards)								
Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 BS 2204	Complex Variables and Statistical Methods	BS	3	3	0	0	30	70	100
B20 EC 2201	Electronic Circuit Analysis and Design	PC	3	3	0	0	30	70	100
B20 EE 2201	Electrical Machines-II	PC	3	3	0	0	30	70	100
B20 EE 2202	Electrical Power Generation Transmission & Distribution	PC	3	3	0	0	30	70	100
B20 EE2203	Electrical Measurements & Instrumentation	PC	3	3	0	0	30	70	100
B20 EC 2206	Electronic Circuit Analysis And Design Lab With Simulation	PC	1.5	0	0	3	15	35	50
B20 EE 2204	Electrical Measurements & Instrumentation Laboratory	PC	1.5	0	0	3	15	35	50
B20 EE 2205	Electrical Machines-I Laboratory	PC	1.5	0	0	3	15	35	50
B20 EE 2206	Smart Systems Laboratory	SOC	2	0	0	4	--	50	50
B20 MC 2201	English Proficiency	MC	0	2	0	0	--	--	--
	TOTAL		21.5	17	0	13	195	505	700

P. Nagaraju Garu

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2) Suggested to change the representation for professional elective courses.

3) Discussed and suggested to change some syllabus contents in Introduction to Electrical systems Course in EEE

4)Suggested to add sensors to Basic Electrical and Electronics Engineering Course for mechanical.

5) Suggested to add servo motors, sensors and actuators to Basic Electrical Engineering course in place of BLDC motors for ECE.

6) Discussed and finalised the syllabus of Principles of Electrical Engineering Course for CSBS

SYLLABUS (Theory)	
UNIT-I (10 Hrs)	**Basic concepts of Electrical circuits:** Concept of Potential difference, voltage, current, Fundamental linear passive and active elements to their functional current-voltage relation, voltage sources and current sources, ideal and practical sources, concept of dependent and independent sources, Kirchhoff-s laws and applications to network solutions using mesh and nodal analysis. Concept of work, power and energy.
UNIT-II (10 Hrs)	**DC Circuits:** Current-voltage relations of the electric network by mathematical equations to analyze the network (Thevenin's theorem, Norton's Theorem, Maximum Power Transfer theorem), Superposition theorem. Simplifications of networks using series-parallel, Star/Delta transformation.
UNIT-III (10 Hrs)	AC Circuits: AC waveform definitions, form factor, peak factor, study of R-L, R-C,RLC series circuit, phasor representation in polar and rectangular form, concept of impedance, admittance, active, reactive, apparent and complex power, power factor. Introduction to 3 phase Balanced AC Circuits, voltage and current relations (Y-Δ connection)
UNIT-IV (10 Hrs)	**Electrostatics and Electromagnetism:** Electrostatic field, electric field strength, concept of permittivity in dielectrics, capacitors, capacitors in series and parallel, energy stored in capacitors, charging and discharging of capacitors. Magnetic field and Faraday's law, self and mutual inductance. Single phase transformer, principle of operation, EMF equation, voltageratio, current ratio, KVA rating, efficiency. Principle of batteries, types and applications.
UNIT-V (10 Hrs)	**Measurements, Sensors and Safety:** Introduction to measuring devices/sensors and transducers (Piezoelectric and thermo-couple) related to electrical signals, Elementary methods for the measurement of single-phase power. Electrical Wiring: Basic layout of the distribution system, necessity of earthing, types of earthing, Safety devices & system.

7) Discussed and finalised the syllabus of Principles of Electrical Engineering Course for AI&DS

SYLLABUS	
UNIT-I (12Hrs)	**Introduction to Electrical circuits:** Introduction to electrical concepts. Types of network elements, Ohms Law, Kirchhoff's Laws, Series and parallel Circuits connection of resistances with DC excitation. Representation of sinusoidal waveforms - Peak, Average and RMS values - Phasor representation - real power -Reactive power - apparent power - power factor. Analysis of single-phase ac circuits consisting of RL - RC - RLC series circuits
UNIT-II (10Hrs)	**D.C Machines:** Faraday's Laws-Induced EMF - Principle of operation of DC Generator - EMF equation – Construction-Types of DC generator-DC motor types, Torque equation –Losses.
UNIT-III (8 Hrs)	**Transformers and AC machines:** Principle of operation of single-phase transformer - EMF equation - equivalent circuit – losses- Transformer efficiency. principle and operation of Induction Motor [Elementary treatment only].
UNIT-IV (12 Hrs)	**Semiconductors and P-N junction diode:** Types of semiconductors. Basic operation and V-I Characteristics of semiconductor diode, Operation of PN junction diode as rectifier, Avalanche breakdown and Zener breakdown phenomenon, Operation of Zener diode as regulator. Light Emitting Diode (LED).

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UNIT-V (8Hrs)	**Bipolar Junction Transistor (BJT) and Field Effect Transistors (FET):** Introduction, construction, basic operation of NPN and PNP transistors, Transistor circuit Configurations- CE, CB, and CC- Input and output Characteristics in various configurations, Transistor as an amplifier, Junction field Effect Transistors (JFET), JFET characteristics [Elementary treatment of FETonly].	

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S.R.K.R. Engg. College
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S.R.K.R. ENGINEERING COLLEGE (AUTONOMUS)
DEPARTMENT OF INFORMATION TECHNOLOGY
CHINNA AMIRAM: BHIMAVARAM-534204

BOARD OF STUDIES MEETING (ONLINE) CIRCULAR

All members of Board of studies, IT department are requested to attend a meeting on 29-11-2020 from 12.00 Noon to 2.00 PM via Zoom platform. In this regard, we trust that you are the right person to contribute your valuable suggestions in Curriculum & syllabus based on the industrial requirement and latest technology prevailing in the Information Technology field which can help the student's community to shape themselves for their bright future.

Agenda:

1. To consider and approve the scheme and syllabus (R20 regulation) for 1st year of
   a) B.Tech (Information Technology)
   b) B.Tech (Artificial Intelligence and Data Science) and
   c) B.Tech (Computer Science and Business System)
2. Any other item.

Head of the Department

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S.R.K.R.Engineering College
BHIMAVARAM - 534 204, INDIA

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Recognised as Scientific and Industrial Research Organisation
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DEAPRTMENT OF INFORMATION TECHNOGY

Minutes of the Board of Studies Meeting

Minutes of the Board of Studies Meeting for the Department of Information Technology, Sagi Ramakrishnam Raju Engineering College, Bhimavaram, held virtually on 29-11-2020 at 12pm - 2:00pm (IST) – via Zoom Platform the following are present.

S.No	Category	Name of the Member	Position	Signature
1	Chairman	Dr. Bh.V.S.R.K. Raju	Professor & HOD Dept. of IT, SRKREC	
2	JNTUK Nominee	Dr. D. Haritha	Professor, Dept. of CSE, University College of Engineering Kakinada (UCEK), JNTU Kakinada .	
3	Experts from Other Universities	Dr. B Vishnu Vardhan	Professor Dept. of CSE, JNTUH College of Engineering ,Manthani, Centenary Colony, Pannur (Vil), Ramagiri (Mdl), Peddapalli, Telangana-505212	
4		Dr. Y. K. Sundara Krishna	Professor Dept. of CSE, Krishna University A.J Kalasala Campus, Rajupeta, Machilipatnam, Andhra Pradesh 521001	
5	Industry Expert	Sri Prasanth Yeleswarapu	Ex. Senior Technical Leader, A Block, Bagmane World Technology Centre, Citrine Block SEZ, Outer Ring Rd, Laxmi Sagar Layout, Mahadevapura, Bengaluru, Karnataka 560048	

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6		Sri Bytha Ravindra	Project Manager Tata Consultancy Services Limited	
7	Expert from Research Organization	Smt. K. Sirisha	Scientist, Defense Research and Development Loboratries, Kanchanbagh, Hyderabad. Telangana 500058.	K. Sirisha
8	Expert from Alumni	M. Srinivasa Varma	Director and CTO, Sri Maharshi Consultancy Pvt Ltd.	
9	Faculty of each Specialization	Sri K.Srinivas	Associate Professor Dept. of IT, SRKREC	K. Srinivas
10		Sri S.Rama Gopala Reddy	Associate Professor Dept. of IT, SRKREC	
11		Dr. B.V.D.S.Sekhar	Associate Professor Dept. of IT, SRKREC	
12		Dr. S.Venkata Ramana	Associate Professor Dept. of IT, SRKREC	
13		Dr.I.HemaLatha	Associate Professor Dept. of IT, SRKREC	I Hemalatha

The Chairman, BOS in Information Technology welcomed the members of BOS , briefed about the agenda to be discussed. The following agenda were placed by the Chairman which were discussed and resolved as follows:

Agenda 1: To consider and approve the scheme and syllabus (R20 Regulation) for 1st year of

a. B.Tech (Information Technology),
b. B.Tech. (Artificial Intelligence and Data Science) and
c. B.Tech. (Computer Science and Business System)

Resolution:

The BOS members went through the syllabus and discussed in length various aspects of the syllabus. The members presented suggested to offer both theory and the concerned lab in the same semester and to offer one Mathematics subject per semester in the first year. After

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incorporation of the changes suggested by the BOS members, the scheme and syllabi (R20 Regulation) for 1st year of

1. B.Tech (Information Technology),
2. B.Tech. (Artificial Intelligence and Data Science) and
3. B.Tech. (Computer Science and Business System)

was approved.

Agenda 2: Any Other Item

Resolutions:

The BOS members discussed about and approved the draft document presented for VISION, MISSION, Program Educational Objectives (PEOs) and Program Specific Objectives(PSOs) for the newly introduced courses B.Tech. (Artificial Intelligence and Data Science) and B.Tech. (Computer Science and Business system)

Finally the meeting concluded with the chairman thanking the members of BOS for their active participation in the deliberations of the meeting.

Chairman (BOS)

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INFORMATION TECHNOLOGY

SCHEME OF INSTRUCTION & EXAMINATION
(With effect from 2020-21 admitted Batch onwards)

Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 HS 1101	English	HS	3	3	0	0	30	70	100
B20 BS 1101	Mathematics-I	BS	3	3	0	0	30	70	100
B20 BS 1103	Applied Chemistry	BS	3	3	0	0	30	70	100
B20 CS 1101	Programming for Problem Solving Using C	ES	3	3	0	0	30	70	100
B20 IT 1101	Fundamentals of Computers and Information Technology	ES	3	3	0	0	30	70	100
B20 CS 1103	Programming for Problem Solving Using C Lab	ES	1.5	0	0	3	15	35	50
B20 BS 1108	Applied Chemistry Lab	BS	1.5	0	0	3	15	35	50
B20 CS 1104	Computer Engineering Workshop	ES	1.5	0	0	3	15	35	50
	TOTAL		**19.5**	**15**	**0**	**9**	**195**	**455**	**650**

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Regulation: R20	I / IV - B.Tech. II - Semester

INFORMATION TECHNOLOGY

SCHEME OF INSTRUCTION & EXAMINATION
(With effect from 2020-21 admitted Batch onwards)

Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 BS 1201	Mathematics-II	BS	3	3	0	0	30	70	100
B20 BS 1202	Applied Physics	BS	3	3	0	0	30	70	100
B20 IT 1201	Digital Logic Design	ES	3	3	0	0	30	70	100
B20 IT 1202	Object Oriented Programming through C++	ES	3	3	0	0	30	70	100
B20 EE 1203	Principles of Electrical and Electronics Engineering	ES	3	3	0	0	30	70	100
B20 BS 1207	Applied Physics Lab	BS	1.5	0	0	3	15	35	50
B20 HS 1202	Communication Skills Lab	HS	1.5	0	0	3	15	35	50
B20 IT 1203	Object Oriented Programming through C++ Lab	ES	1.5	0	0	3	15	35	50
B20 MC 1202	Professional Ethics and Human Values	MC	0	2	0	0	--	--	--
B20 MC 1203	National Service Scheme (NSS)	MC	0	0	0	2	--	--	--
	TOTAL		**19.5**	17	**0**	**11**	**195**	**455**	**650**

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ARTIFICIAL INTELLIGENCE & DATA SCIENCE

SCHEME OF INSTRUCTION & EXAMINATION
(With effect from 2020-21 admitted Batch onwards)

Course Code	Course Name	Category	Cr.	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 HS 1101	English	HS	3	3	0	0	30	70	100
B20 BS 1101	Mathematics-I	BS	3	3	0	0	30	70	100
B20 BS 1102	Applied Physics	BS	3	3	0	0	30	70	100
B20 CS 1101	Programming for Problem Solving Using C	ES	3	3	0	0	30	70	100
B20 IT 1101	Fundamentals of Computers and Information Technology	ES	3	3	0	0	30	70	100
B20 CS 1103	Programming for Problem Solving Using C Lab	ES	1.5	0	0	3	15	35	50
B20 BS 1107	Applied Physics Lab	BS	1.5	0	0	3	15	35	50
B20 CS 1104	Computer Engineering Workshop	ES	1.5	0	0	3	15	35	50
		TOTAL	**19.5**	**15**	**0**	**9**	**195**	**455**	**650**

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Regulation: R20	I / IV - B.Tech. II - Semester

ARTIFICIAL INTELLIGENCE & DATA SCIENCE

SCHEME OF INSTRUCTION & EXAMINATION
(With effect from 2020-21 admitted Batch onwards)

Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 BS 1201	Mathematics-II	BS	3	3	0	0	30	70	100
B20 BS 1203	Applied Chemistry	BS	3	3	0	0	30	70	100
B20 IT 1201	Digital Logic Design	ES	3	3	0	0	30	70	100
B20 IT 1202	Object Oriented Programming through C++	ES	3	3	0	0	30	70	100
B20 EE 1203	Principles of Electrical and Electronics Engineering	ES	3	3	0	0	30	70	100
B20 BS 1208	Applied Chemistry Lab	BS	1.5	0	0	3	15	35	50
B20 HS 1202	Communication Skills Lab	HS	1.5	0	0	3	15	35	50
B20 IT 1203	Object Oriented Programming through C++ Lab	ES	1.5	0	0	3	15	35	50
B20 MC 1201	Environmental Science	MC	0	2	0	0	--	--	--
B20 MC 1203	National Service Scheme (NSS)	MC	0	0	0	2	--	--	--
	TOTAL		**19.5**	**17**	**0**	**11**	**195**	**455**	**650**

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Regulation: R20	I / IV - B.Tech. I - Semester

COMPUTER SCIENCE & BUSINESS SYSTEM

SCHEME OF INSTRUCTION & EXAMINATION
(With effect from 2020-21 admitted Batch onwards)

Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 BS 1104	Discrete Mathematics	BS	3	3	0	0	30	70	100
B20 BS 1105	Introductory Topics in Statistics, Probability & Calculus	BS	3	3	0	0	30	70	100
B20 BS 1106	Fundamentals of Physics	BS	3	3	0	0	30	70	100
* B20 EE 1103	Principles of Electrical Engineering	ES	3	2	0	0	30	70	100
				0	0	2	15	35	50
B20 CB 1101	Fundamentals of Computer Science & Programming	ES	3	3	0	0	30	70	100
B20 HS 1102	Business Communication & Value Science - I Lab	HS	1.5	0	0	3	15	35	50
B20 BS 1109	Fundamentals of Physics Lab	BS	1.5	0	0	3	15	35	50
B20 CB 1102	Fundamentals of Computer Science & Programming Lab	ES	1.5	0	0	3	15	35	50
		TOTAL	**19.5**	**14**	**0**	**11**	**210**	**490**	**700**

Note: *- Integrated course and its evaluation guide lines are mentioned in the Syllabus

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Regulation: R20	I / IV - B.Tech. II - Semester

COMPUTER SCIENCE & BUSINESS SYSTEM

SCHEME OF INSTRUCTION & EXAMINATION
(With effect from 2020-21 admitted Batch onwards)

Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 BS 1205	Linear Algebra	BS	3	3	0	0	30	70	100
B20 BS 1206	Statistical Methods	BS	3	3	0	0	30	70	100
* B20 EC 1201	Principles of Electronics Engineering	ES	3	2	0	0	30	70	100
				0	0	2	15	35	50
B20 CB 1201	Data Structures and Algorithms	ES	3	3	0	0	30	70	100
B20 HS 1201	Fundamentals of Economics	HS	3	3	0	0	30	70	100
B20 BS 1209	Statistical Methods Lab	BS	1.5	0	0	3	15	35	50
B20 CB 1202	Data Structures and Algorithms Lab	EC	1.5	0	0	3	15	35	50
B20 HS 1203	Business Communication & Value Science – II	HS	1.5	0	0	3	15	35	50
B20 MC 1201	Environmental Science	MC	0	2	0	0	--	--	--
B20 MC 1203	National Service Scheme (NSS)	MC	0	0	0	2	--	--	--
		TOTAL	**19.5**	**16**	**0**	**13**	**210**	**490**	**700**

Note: *- Integrated course and its evaluation guide lines are mentioned in the Syllabus

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MEETING-1

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE(A)
CHINNA AMIRAM :: BHIMAVARAM-534204
DEPARTMENT OF MECHANICAL ENGINEERING

Dt: 11-08-2020

CIRCULAR

This is to inform you that the Department of Mechanical Engineering will hold a meeting on 12-08-2020 at 2.00 PM in Room No. M-109 (HOD Room) virtually (using zoom virtual meeting platform). In this connection, all the members of the Board of Studies are requested to attend the same.

Agenda:

1. To discuss and finalize course structure and syllabus for 1/4 - B.tech & 2/4 – B.Tech Mechanical Engineering program under R-20 regulations and R-19 regulations respectively.
2. To discuss and finalize course structure and syllabus for 4/4 – B.Tech Mechanical Engineering program , under R-17 regulations.
3. To discuss and finalize course structure and syllabus for 2/2 – M.Tech 3rd&4th semester of CAD/CAM program , under R-19 regulations.

Head of the Department
Professor & Head
Dept. of Mechanical Engg.
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C.C to:

1. The Members of Board of studies
2. Office file

Dept. of Mechanical Engg. S.R.K.R. Engg. College BHIMAVARAM 534 204

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MINUTES OF THE MEETING

EIGHTH Board of Studies meeting in Virtual Mode (using ZOOM Platform) was held on 12-08-2020 in M 109 (Head Room) of Mechanical Engineering Department at 2:00 PM inorder to discuss the following items:

(1) Discussion & Finalization of Course Structure and Syllabus of 1/4 B.Tech (Mech) under R20 Regulations
(2) Discussion & Finalization of course structure and syllabus of 2/4 B Tech Mechanical Engg. program under R19 Regulations
(3) Discussion & Finalization of Course structure and syllabus for 4/4 B Tech Mechanical Engineering program under R17 Regulations
(4) Discussion & Finalization of Course structure and syllabus for 2/2 M Tech Third & Fourth Semester CAD/CAM program under R19 Regulations.

H. Jagapathi Raju

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MINUTES OF THE MEETING ~~BOS~~ RESOLUTIONS

(1) Resolved to offer Engineering Drawing Course for Mech Engg, Civil Engg, & E.E.E programs in the First Semester & for ECE program in the Second Semester under R20 Regulations Discussed and also finalized the syllabus for Engineering Drawing Course (1/4 B.Tech)

(2) Resolved to offer Workshop practice for Mech. Engg. & E.E.E program in the First Semester under R20 Regulation. Also discussed & finalized the syllabus for Workshop practice course for 1/4 B.Tech.

(3) Resolved to offer Prime Movers & pumps Course for the E.E.E program in the second semester for 1/4 B.Tech under R20 Regulations. Also discussed and finalized the syllabus for the same.

(4) Resolved to incorporate "Engineering Mechanics" & "Material Science and Metallurgy" courses for Mech Engg (1/4 B.Tech) program in second semester under R20 Regulations.

(5) One of the BOS Members DR. A. GOPALA KRISHNA, Professor, Dept of Mech. Engg. JNTUK, suggested to add a topic 'Extraction of metals' in unit-IV of Material Science and Metallurgy Course.

(6) Finalized the Course Structure and syllabus for the 1/4 B.Tech (R20) for the Mechanical Engineering program.

(7) One of the BOS Members DR. G. RAVI KIRAN SASTRY, Professor, Dept of Mech. Engg., NIT AP, Suggested to change the Course Name for "Thermodynamics" as "Engineering Thermodynamics" and Thermal Engineering as "Applied Thermal Engineering" of 2/4 B.Tech (R19) Mech. Engg. program.

(8) Resolved to offer the following Courses in addition to Regular Curriculum for 2/4 B.Tech (R19) Mech. Engg. Program

S.No.	Course Name	Semester
1	Professional Ethics & Human Values	First
2	Introduction to Machine learning using Python	First
3	Constitution of India	

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(9) Finalized the course structure and syllabus for the 2/4 B.Tech (R19) for the Mech. Engg. program.

(10) Resolved to offer 3 Electives [Elective-I, Elective-II, & Elective-III] with 3 courses in Each Elective for 4/4 B.Tech Mechanical Engineering program under R17 Regulations.

(11) One of the BOS Members, Dr. G. RAVI KIRAN SASTRY, Professor, Dept. of Mech. Engg., NITAP, suggested to change the course Name for "Automobile Engineering" as "Automobile Engineering and Hybrid Vehicles" and also suggested to add the syllabus related to Hybrid vehicles in unit-v for 4/4 B.Tech (R17) Mech. Engg. program.

(12) Finalized the course structure and syllabus for the 4/4 B.Tech Mechanical Engineering Program under R17 Regulations.

(13) Resolved to offer 1 program Elective (Program Elective-V) with 3 Courses in Each elective along with MOOCS-I for 2/2 M.Tech CAD/CAM Third Semester program under R19 Regulations

(14) Resolved to offer the following courses under open Elective Category (offered to other programs) for 2/2 M.Tech CAD/CAM Third Semester program under R19 Regula

S.NO.	Open Elective Course Name
1	OPerations Research
2	Nano Technology
3	product Design & Manufacturing
4	MOOCS-II

(15) Finalized the course structure and syllabus for the 2/2 M.Tech CAD/CAM Third & Fourth Semester Program under R19 Regulations.

(16) FeedBacks collected from various Stake holders has been discussed while designing the Course structure and syllabus.

MEMBERS PRESENT

S.NO.	NAME OF THE MEMBER	DESIGNATION
01	Dr. G. Ravi Kiran Sastry	Professor & Dept of Mech. Engg. NITAP, Tadepalligudem
02	Dr. K. Venkata Subbaiah	Prof. & Head, Dept. of Mech. Engg. AUCE, Andhra University
03	Dr A. Gopala Krishna	Prof. & Director R&D, UCE JNTUK, Kakinada
04	Dr. K. Brahma Raju (Chairman)	Professor & Head, DME
05	Prof. N.V. Subba Raju	Professor
06	Prof K. Satyanarayana	Professor
07	Dr. A. Bala Krishna	Professor
08	Dr V. Durga Prasada Rao	Professor
09	Dr. P. Rama Murty Raju	Professor
10	Dr. K. Suresh Babu	Professor
11	Dr K.V. Murali Krishnam Raju	Professor
12	Sri. P.V. Gopala Raju	Associate professor
13	Sri. C. Srinivas	Associate professor
14	Sri. V.K. Viswanadha Raju	Associate professor
15	Sri. C.R.K. Raju	Associate professor
16	Sri. Ch. Gopala Raju	Associate professor
17	Sri. P.V.R.S. Padma Raju	Associate professor
18	Sri. G. Chatapathi Raju	Associate professor
19	Dr. S. Rajesh	Associate professor
20	Dr. K. Sita Rama Raju	Associate professor
21	M.S.S. Kiran Varma	Student (M.Tech)
22	M. Rahamath Ansari	Student (M.Tech)
23	S. Vivek Varma	Student (3/4 B.Tech Mech)
24	B.S. Subbaraju	Student (3/4 B.Tech Mech)

P. Nagapathi Raju

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Professor & Head
Dept. of Mechanical Engg.
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RESOLUTIONS FOR THE MEETING DATED 12-08-2020

(1) Resolved to offer Engineering Drawing Course for Mech Engg, Civil Engg, & E.E.E programs in the First Semester & for ECE program in the Second Semester under R20 Regulations Discussed and also finalized the Syllabus for Engineering Drawing Course (1/4 B.Tech)

Regulation: R20 — I/IV - B.Tech. I - Semester

ELECTRICAL & ELECTRONICS ENGINEERING
(under Choice Based Credit System Elective Course System)

SCHEME OF INSTRUCTION &EXAMINATION
(With effect from 2020-21 admitted Batch onwards)

Course Code	Course Name	Category	Cr.	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 HS1101	English	HS	3	3	0	0	30	70	100
B20 BS1101	Mathematics-I	BS	3	3	0	0	30	70	100
B20 BS1102	Applied Physics	BS	3	3	0	0	30	70	100
B20 ME1101	Engineering Drawing	ES	3	2	0	2	30	70	100
B20 EE1101	Introduction to Electrical Systems	ES	3	3	0	0	30	70	100
B20 EE1104	Basic Electrical Systems Lab	ES	1.5	0	0	3	15	35	50
B20 BS1107	Applied Physics Lab	BS	1.5	0	0	3	15	35	50
B20 ME1102	Workshop Practice	ES	1.5	0	0	3	15	35	50
TOTAL			19.5	14	0	11	195	455	650

Regulation: R20 — I / IV - B.Tech. I - Semester

MECHANICAL ENGINEERING
(under Choice Based Credit System / Elective Course System)

SCHEME OF INSTRUCTION &EXAMINATION
(With effect from 2020-21 admitted Batch onwards)

Course Code	Course Name	Category	Cr.	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 HS1101	English	HS	3	3	0	0	30	70	100
B20 BS1101	Mathematics-I	BS	3	3	0	0	30	70	100
B20 BS1102	Applied Physics	BS	3	3	0	0	30	70	100
B20 ME1101	Engineering Drawing	ES	3	2	0	2	30	70	100

Regulation: R20 — I / IV - B. Tech. I - Semester

CIVIL ENGINEERING
(under Choice Based Credit System / Elective Course System)

SCHEME OF INSTRUCTION &EXAMINATION
(With effect from 2020-21 admitted Batch onwards)

Course Code	Course Name	Category	Cr.	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 HS1101	English	HS	3	3	0	0	30	70	100
B20 BS1101	Mathematics-I	BS	3	3	0	0	30	70	100
B20 BS1102	Applied Physics	BS	3	3	0	0	30	70	100
B20 ME1101	Engineering Drawing	ES	3	2	0	0	30	70	100
B20 CE1101	Engineering Geology	ES	3	3	0	0	30	70	100
B20 CE1102	Engineering Geology Lab	ES	1.5	0	0	3	15	35	50
B20 BS1107	Applied Physics Lab	BS	1.5	0	0	3	15	35	50
B20 CE1103	Basics of Civil Engineering Workshop	ES	1.5	0	0	3	15	35	50
TOTAL			19.5	14	0	9	195	455	650

Regulation: R20 — I / IV - B.Tech. I - Semester

ELECTRONICS & COMMUNICATION ENGINEERING
(under Choice Based Credit System Elective Course System)

SCHEME OF INSTRUCTION &EXAMINATION
(With effect from 2020-21 admitted Batch onwards)

Course Code	Course Name	Category	Cr.	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 HS1101	English	HS	3	3	0	0	30	70	100
B20 BS1101	Mathematics-I	BS	3	3	0	0	30	70	100
B20 BS1103	Applied Chemistry	BS	3	3	0	0	30	70	100
B20 CS1101	Programming for Problem Solving Using C	ES	3	3	0	0	30	70	100
B20 EC1101	Basic Electronics	ES	3	3	0	0	30	70	100
B20 CS1103	Programming for Problem Solving Using C Lab	ES	1.5	0	0	3	15	35	50
B20 BS1108	Applied Chemistry Lab	BS	1.5	0	0	3	15	35	50
B20 EC1102	Electronics Workshop	ES	1.5	0	0	3	15	35	50
TOTAL			19.5	15	0	9	195	455	650

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(2) Resolved to offer Workshop practice for Mech. Engg. & E.E.E program in the First Semester under R20 Regulation. Also discussed & finalized the syllabus for Workshop practice course for 1/4 B.Tech.

Regulation: R20							I/IV - B.Tech. I - Semester		
ELECTRICAL & ELECTRONICS ENGINEERING (under Choice Based Credit System Elective Course System)									
SCHEME OF INSTRUCTION &EXAMINATION (With effect from 2020-21 admitted Batch onwards)									
Course Code	Course Name	Category	Cr.	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 HS1101	English	HS	3	3	0	0	30	70	100
B20 BS1101	Mathematics-I	BS	3	3	0	0	30	70	100
B20 BS1102	Applied Physics	BS	3	3	0	0	30	70	100
B20 ME1101	Engineering Drawing	ES	3	2	0	2	30	70	100
B20 EE1101	Introduction to Electrical Systems	ES	3	3	0	0	30	70	100
B20 EE1104	Basic Electrical Systems Lab	ES	1.5	0	0	3	15	35	50
B20 BS1107	Applied Physics Lab	BS	1.5	0	0	3	15	35	50
B20 ME1102	Workshop Practice	ES	1.5	0	0	3	15	35	50
TOTAL			19.5	14	0	11	195	455	650

Regulation: R20							I/IV - B.Tech. I - Semester		
MECHANICAL ENGINEERING (under Choice Based Credit System / Elective Course System)									
SCHEME OF INSTRUCTION &EXAMINATION (With effect from 2020-21 admitted Batch onwards)									
Course Code	Course Name	Category	Cr.	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 HS1101	English	HS	3	3	0	0	30	70	100
B20 BS1101	Mathematics-I	BS	3	3	0	0	30	70	100
B20 BS1102	Applied Physics	BS	3	3	0	0	30	70	100
B20 ME1101	Engineering Drawing	ES	3	2	0	2	30	70	100

(3) Resolved to offer Prime Movers & pumps course for the E.E.E program in the second Semester for 1/4 B.Tech under R20 Regulations. Also discussed and finalized the syllabus for the same.

Regulation: R20							I/IV - B.Tech. II - Semester		
MECHANICAL ENGINEERING (under Choice Based Credit System / Elective Course System)									
SCHEME OF INSTRUCTION &EXAMINATION (With effect from 2020-21 admitted Batch onwards)									
Course Code	Course Name	Category	Cr.	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 BS1201	Mathematics-II	BS	3	3	0	0	30	70	100
B20 BS1203	Applied Chemistry	BS	3	3	0	0	30	70	100
B20 CS1201	Programming for Problem Solving Using C	ES	3	3	0	0	30	70	100
B20 ME1201	Engineering Mechanics	ES	3	3	0	0	30	70	100
B20 ME1202	Material Science and Metallurgy	ES	3	3	0	0	30	70	100
B20 BS1208	Applied Chemistry Lab	BS	1.5	0	0	3	15	35	50
B20 HS1202	Communication Skills Lab	HS	1.5	0	0	3	15	35	50
B20 CS1205	Programming for Problem Solving Using C Lab	ES	1.5	0	0	3	15	35	50
B20 MC1201	Environmental Science	MC	0	2	0	0	--	--	--
B20 MC1203	National Service Scheme(NSS)	MC	0	0	0	2	--	--	--
TOTAL			19.5	17	0	11	195	455	650

Regulation: R20							I/IV - B.Tech. II - Semester		
ELECTRICAL & ELECTRONICS ENGINEERING (under Choice Based Credit System Elective Course System)									
SCHEME OF INSTRUCTION &EXAMINATION (With effect from 2020-21 admitted Batch onwards)									
Course Code	Course Name	Category	Cr.	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 BS1201	Mathematics-II	BS	3	3	0	0	30	70	100
B20 BS1203	Applied Chemistry	BS	3	3	0	0	30	70	100
B20 CS1201	Programming for Problem Solving Using C	ES	3	3	0	0	30	70	100
B20 CS1204	Digital Computer Fundamentals	ES	3	3	0	0	30	70	100
B20 ME1204	Prime Movers and Pumps	ES	3	3	0	0	30	70	100
B20 BS1208	Applied Chemistry Lab	BS	1.5	0	0	3	15	35	50
B20 HS1202	Communication Skills Lab	HS	1.5	0	0	3	15	35	50
B20 CS1205	Programming for Problem Solving Using C Lab	ES	1.5	0	0	3	15	35	50
B20 MC1201	Environmental Science	MC	0	2	0	0	--	--	--
B20 MC1203	National Service Scheme(NSS)	MC	0	0	0	2	--	--	--
TOTAL			19.5	17	0	11	195	455	650

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(4) Resolved to incorporate "Engineering Mechanics" & "Material Science and Metallurgy" courses for Mech. Engg (I/4 B.Tech) program in second semester under R20 Regulation

Regulation: R20	I / IV - B.Tech. II - Semester

MECHANICAL ENGINEERING
(under Choice Based Credit System / Elective Course System)

SCHEME OF INSTRUCTION &EXAMINATION
(With effect from 2020-21 admitted Batch onwards)

Course Code	Course Name	Category	Cr.	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 BS1201	Mathematics-II	BS	3	3	0	0	30	70	100
B20 BS1203	Applied Chemistry	BS	3	3	0	0	30	70	100
B20 CS1201	Programming for Problem Solving Using C	ES	3	3	0	0	30	70	100
B20 ME1201	Engineering Mechanics	ES	3	3	0	0	30	70	100
B20 ME1202	Material Science and Metallurgy	ES	3	3	0	0	30	70	100
B20 BS1208	Applied Chemistry Lab	BS	1.5	0	0	3	15	35	50
B20 HS1202	Communication Skills Lab	HS	1.5	0	0	3	15	35	50

(5) One of the BoS Members Dr. A. GOPALAKRISHNA, Professor, Dept of Mech. Engg. JNTUK, suggested to add a topic 'Extraction of metals' in unit-IV of Material Science and Metallurgy Course.

SYLLABUS: MATERIAL SCIENCE AND METALLURGY (B20ME1202)

(For ME)

UNIT-I: Structure of crystalline solids: Atomic structure & bonding in solids- Unit cell, Space lattice, Crystal structures and its types-calculations of radius, Coordination Number and Atomic Packing Factor for different

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cubic structures, Indices for planes and directions-
Imperfection in solids, point defects, Line defects, planar defects and Volume defects- Concept of Slip & twinning.

UNIT-II: Phase diagrams: Basic terms-Solid solutions - Gibbs phase rule- Lever rule – cooling curves- Phase diagrams - construction of phase diagrams- binary phase diagrams - Al-Cu and Al-Si phase diagrams- Invariant reactions, eutectic, peritectic, eutectoid, peritectoid reactions, metatectic & monotectic reactions, Iron carbon phase diagram -Heat treatment of steel- Annealing, and its types, normalizing, hardening, tempering, martemering,
austempering.

UNIT-III: TTT diagrams, Construction of TTT diagram, TTT diagram for hypoeutectoid and alloy steels, CCT diagram- Martensitic transformation, nature of martensitic transformation-
Surface hardening processes like case hardening, carburizing, cyaniding, nitriding, Induction hardening, Flame

hardening, hardenabilty, Jominy end-quenchtest.

UNIT-IV: Extraction of metals, Engineering Alloys: Effect of alloying elements of steel -Properties, composition, and uses of Plain carbon, low carbon, medium & high carbon steels, stainless steels, high speed steels, Hadfield steels, tool steels - Cast irons, gray CI, white CI, malleable CI, SG Cast iron-The light alloys- Al & Mg & Titanium alloys- Copper &its
Alloys: brasses & bronzes, Shape Memory Alloys.

UNIT-V: Composites: Introduction, classification, Manufacturing using Stir Casting, Powder Metallurgy, Spray Layup, Filament Winding, Resin Transfer Moulding & Chemical Vapour
Deposition Methods & applications of composites

(6) Finalized the course Structure and Syllabus for the I/I B.Tech (R20) for the Mechanical Engineering program.

Regulation: R20			I / IV - B.Tech. I - Semester						
MECHANICAL ENGINEERING (under Choice Based Credit System / Elective Course System)									
SCHEME OF INSTRUCTION &EXAMINATION (With effect from 2020-21 admitted Batch onwards)									
Course Code	Course Name	Category	Cr.	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 HS1101	English	HS	3	3	0	0	30	70	100
B20 BS1101	Mathematics-I	BS	3	3	0	0	30	70	100
B20 BS1102	Applied Physics	BS	3	3	0	0	30	70	100
B20 ME1101	Engineering Drawing	ES	3	2	0	2	30	70	100
B20 EE1102	Basic Electrical and Electronics Engineering	ES	3	3	0	0	30	70	100
B20 EE1105	Basic Electrical and Electronics Engineering Lab	ES	1.5	0	0	3	15	35	50
B20 BS1107	Applied Physics Lab	BS	1.5	0	0	3	15	35	50
B20 ME1102	Workshop Practice	ES	1.5	0	0	3	15	35	50
TOTAL			19.5	14	0	11	195	455	650

Regulation: R20			I / IV - B.Tech. II - Semester						
MECHANICAL ENGINEERING (under Choice Based Credit System / Elective Course System)									
SCHEME OF INSTRUCTION &EXAMINATION (With effect from 2020-21 admitted Batch onwards)									
Course Code	Course Name	Category	Cr.	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 BS1201	Mathematics-II	BS	3	3	0	0	30	70	100
B20 BS1203	Applied Chemistry	BS	3	3	0	0	30	70	100
B20 CS1201	Programming for Problem Solving Using C	ES	3	3	0	0	30	70	100
B20 ME1201	Engineering Mechanics	ES	3	3	0	0	30	70	100
B20 ME1202	Material Science and Metallurgy	ES	3	3	0	0	30	70	100
B20 BS1208	Applied Chemistry Lab	BS	1.5	0	0	3	15	35	50
B20 HS1202	Communication Skills Lab	HS	1.5	0	0	3	15	35	50
B20 CS1205	Programming for Problem Solving Using C Lab	ES	1.5	0	0	3	15	35	50
B20 MC1201	Environmental Science	MC	0	2	0	0	--	--	--
B20 MC1203	National Service Scheme(NSS)	MC	0	0	0	2	--	--	--
TOTAL			19.5	17	0	11	195	455	650

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(7) One of the BoS Members Dr. G. RAVI KIRAN SASTRY, Professor, Dept of Mech. Engg., NITAP, Suggested to change the Course Name for "Thermodynamics" as "Engineering Thermodynamics" and Thermal Engineering as "Applied Thermal Engineering" of 2/4 B.Tech (R17) Mech. Engg. program.

Regulation: R17			II / IV - B.Tech. I- Semester						
MECHANICAL ENGINEERING (under Choice Based Credit System / Elective Course System)									
SCHEME OF INSTRUCTION &EXAMINATION (With effect from 2017-18 admitted Batch onwards)									
Code No.	Course	Category	Credits	Lecture Hrs	Tutorial Hrs	Lab Hrs	Internal Marks	Exam Marks	Total Marks
B17 BS2101	Mathematics-IV		3	3	1	--	30	70	100
B17ME2101	Strength of Materials		3	3	1	--	30	70	100
B17ME2102	Thermodynamics		3	3	1	--	30	70	100
B17ME2103	Manufacturing Process		3	3	1	--	30	70	100
B17ME2104	Metallurgy &Materials Science		3	3	1	--	30	70	100
B17ME2105	Advanced Engineering Drawing		3	2	--	4	30	70	100
B17ME2106	Mechanical Engineering Lab		2	--	--	3	50	50	100
B17EE2107	Basic Electrical &Electronics Engineering Lab		2	--	--	3	50	50	100
B17ME2107	AutoCAD		1	--	--	2	50	--	50
B17 BS2107	English Profiriency-I		--	1	1	--	--	--	--
B17 BS2108	Professional Ethics &Human Values		--	2	--	--	--	--	--
Total			23	20	6	12	330	520	850

Regulation: R17			II / IV - B.Tech. II- Semester						
MECHANICAL ENGINEERING (under Choice Based Credit System / Elective Course System)									
SCHEME OF INSTRUCTION &EXAMINATION (With effect from 2017-18 admitted Batch onwards)									
Code No.	Course	Category	Credits	Lecture Hrs	Tutorial Hrs	Lab Hrs	Sessional Marks	Exam Marks	Total Marks
B17 ME2201	Advanced Strength of Materials	ES	3	3	1	--	30	70	100
B17 ME2202	Thermal Engineering	ES	3	3	1	--	30	70	100
B17 ME2203	Metal Cutting& Machine Tools	ES	3	3	1	--	30	70	100
B17ME2204	Fluid Mechanics	ES	3	3	1	--	30	70	100
B17ME2205	Mechanical Engineering Drawing	ES	3	--	--	4	30	70	100
B17 BS2208	Engineering Economics	BS	3	3	1	--	30	70	100
B17ME2208	Manufacturing Process Lab	ES	2	--	--	3	50	50	100
B17CE2210	Strength of Materials Lab	ES	2	--	--	3	50	50	100
B17ME2209	Industry Oriented Technology Lab	ES	1	--	--	2	50	--	50
B17BS2206	English Proficiency-II	BS	--	1	1	--	--	--	--
Total			23	16	6	12	330	520	850

(8) Resolved to offer the following courses in addition to Regular Curriculum for 2/4 B.Tech (B19) Mech. Engg. Program

S.No.	Course Name	Semester
1	Professional Ethics & Human values	First
2	Introduction to Machine Learning Using Python	First
3	Constitution of India	Second

Regulation: R19		II / IV - B.Tech. I - Semester							
MECHANICAL ENGINEERING (Under Choice Based Credit System / Elective Course System)									
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2019-20 admitted Batch onwards)									
Course Code	Course Name	Category	Cr.	L	T	P	Int. Marks	Ext. Marks	Total Marks
B19 BS 2101	Mathematics-III	BS	3	3	--	--	25	75	100
B19 ME 2101	Strength of Materials	PC	3	3	--	--	25	75	100
B19 ME 2102	Engineering Thermodynamics	PC	3	3	--	--	25	75	100
B19 ME 2103	Manufacturing Processes	PC	3	3	--	--	25	75	100
B19 ME 2104	Metallurgy and Materials Science	PC	3	3	--	--	25	75	100
B19 ME 2105	Mechanical Engineering Drawing	PC	3	2	--	2	25	75	100
B19 ME 2106	Mechanical Engineering Lab	PC	1.5	--	--	3	20	30	50
B19ME 2107	Manufacturing Processes Lab	PC	1.5	--	--	3	20	30	50
B19MC 2101	Professional Ethics and Human Values	MC	--	3	--	--	--	--	--
B19MC 2104	Introduction to Machine Learning using Python	MC	--	2	--	2	--	--	--
		TOTAL	21	22	--	10	190	510	700

Regulation: R19		II / IV - B.Tech. II - Semester							
MECHANICAL ENGINEERING (Under Choice Based Credit System / Elective Course System)									
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2019-20 admitted Batch onwards)									
Course Code	Course Name	Category	Cr.	L	T	P	Int. Marks	Ext. Marks	Total Marks
B19 BS 2201	Mathematics-IV	BS	3	3	--	--	25	75	100
B19 ME2201	Advanced Strength of Materials	PC	3	3	--	--	25	75	100
B19 ME2202	Applied Thermal Engineering	PC	3	3	--	--	25	75	100
B19 ME2203	Metal Cutting and Machine Tools	PC	3	3	--	--	25	75	100
B19 ME2204	Fluid Mechanics	PC	3	3	--	--	25	75	100
B19 HS2202	Managerial Economics and Financial Accountancy	HS	3	3	--	--	25	75	100
B19 ME2205	Strength of Materials Lab	PC	1.5	--	--	3	20	30	50
B19ME 2206	Machine Tools Lab	PC	1.5	--	--	3	20	30	50
B19 MC 2202	Constitution of India	MC	0	3	--	--	--	--	--
		TOTAL	21	21	--	6	190	510	700

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(9) Finalized the course structure and syllabus for the 3/4 B.Tech (R17) for the Mech. Engg. program.

Regulation: R19		II / IV - B.Tech. I - Semester							
MECHANICAL ENGINEERING (Under Choice Based Credit System / Elective Course System)									
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2019-20 admitted Batch onwards)									
Course Code	Course Name	Category	Cr.	L	T	P	Int. Marks	Ext. Marks	Total Marks
B19 BS 2101	Mathematics-III	BS	3	3	--	--	25	75	100
B19 ME 2101	Strength of Materials	PC	3	3	--	--	25	75	100
B19 ME 2102	Engineering Thermodynamics	PC	3	3	--	--	25	75	100
B19 ME 2103	Manufacturing Processes	PC	3	3	--	--	25	75	100
B19 ME 2104	Metallurgy and Materials Science	PC	3	3	--	--	25	75	100
B19 ME 2105	Mechanical Engineering Drawing	PC	3	2	--	2	25	75	100
B19 ME 2106	Mechanical Engineering Lab	PC	1.5	--	--	3	20	30	50
B19ME 2107	Manufacturing Processes Lab	PC	1.5	--	--	3	20	30	50
B19MC 2101	Professional Ethics and Human Values	MC	--	3	--	--	--	--	--
B19MC 2104	Introduction to Machine Learning using Python	MC	--	2	--	2	--	--	--
		TOTAL	21	22	--	10	190	510	700

Regulation: R19		II / IV - B.Tech. II - Semester							
MECHANICAL ENGINEERING (Under Choice Based Credit System / Elective Course System)									
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2019-20 admitted Batch onwards)									
Course Code	Course Name	Category	Cr.	L	T	P	Int. Marks	Ext. Marks	Total Marks
B19 BS 2201	Mathematics-IV	BS	3	3	--	--	25	75	100
B19 ME2201	Advanced Strength of Materials	PC	3	3	--	--	25	75	100
B19 ME2202	Applied Thermal Engineering	PC	3	3	--	--	25	75	100
B19 ME2203	Metal Cutting and Machine Tools	PC	3	3	--	--	25	75	100
B19 ME2204	Fluid Mechanics	PC	3	3	--	--	25	75	100
B19 HS2202	Managerial Economics and Financial Accountancy	HS	3	3	--	--	25	75	100
B19 ME2205	Strength of Materials Lab	PC	1.5	--	--	3	20	30	50
B19ME 2206	Machine Tools Lab	PC	1.5	--	--	3	20	30	50
B19 MC 2202	Constitution of India	MC	0	3	--	--	--	--	--
		TOTAL	21	21	--	6	190	510	700

(10) Resolved to offer 3 Electives [Elective-I, Elective-II, & Elective-III] with 3 Courses in Each Elective for 4/4 B.Tech Mechanical Engineering program under R17 Regulations.

Regulation: R17		IV/ IV - B.Tech. I- Semester							
MECHANICAL ENGINEERING (under Choice Based Credit System / Elective Course System)									
SCHEME OF INSTRUCTION &EXAMINATION (With effect from 2017-18 admitted Batch onwards)									
Code No.	Name of the Subject	Category	Credits	Lecture Hrs	Tutorial Hrs	Lab Hrs	Internal Marks	External Marks	Total Marks
B17ME4101	Heat Transfer	ES	3	3	1	--	30	70	100
B17ME4102	Computer Aided Manufacturing	ES	3	3	1	--	30	70	100
B17ME4103	Mechatronics	ES	3	3	1	--	30	70	100
#ELE-I	Elective-I	ES	3	3	1	--	30	70	100
#ELE-II	Elective-II	ES	3	3	1	--	30	70	100
B17ME4110	Heat Transfer Lab	ES	2	--	--	3	50	50	100
B17ME4111	CAD Lab	ES	2	--	--	3	50	50	100
Total			19	15	5	6	250	450	700

	Code No.	Course
#ELE-I	B17ME4104	Finite Element Analysis
	B17ME4105	Automation in Manufacturing
	B17ME4106	Quality Control and Assurance
#ELE-II	B17ME4107	Project Management
	B17ME4108	Tool Design
	B17ME4109	Refrigeration &Air Conditioning

Regulation: R17		IV/ IV - B.Tech. II- Semester						
MECHANICAL ENGINEERING (under Choice Based Credit System / Elective Course System)								
SCHEME OF INSTRUCTION &EXAMINATION (With effect from 2017-18 admitted Batch onwards)								
Code No.	Name of the Subject	Category	Credits	Lecture Hrs	Tutorial Hrs	Lab Hrs	Internal Marks	External Marks	Total Marks
B17ME4201	Production Planning &Control	ES	3	3	1	--	30	70	100
# ELE-III	Elective-III	ES	3	3	1	--	30	70	100
B17ME4205	CAM Lab	ES	2	--	--	3	50	50	100
B17ME4206	Seminar	ES	2	--	--	--	50	--	50
B17ME4207	Project Work	ES	10	--	--	3	60	140	200
Total			20	6	2	6	220	330	550

	Code No.	Course
#ELE-III	B17ME4202	Power Plant Engineering
	B17ME4203	Automobile Engineering and Hybrid Vehicles
	B17ME4204	Additive Manufacturing

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(11) One of the BOS Member, Dr. G. RAVI KIRAN SASTRY, Professor, Dept. of Mech. Engg., NITAP, suggested to change the course name for "Automobile Engineering" as "Acutomobile Engineering and Hybrid Vehicles" and also suggested to add the Syllabus related to Hybrid vehicles in unit-v for 4/4 B.Tech (R17) Mech. Engg. program.

SYLLABUS: AUTOMOBILE ENGINEERING (B16 ME 3208)

(Elective-II)

Introduction: Definition of automobile, Automobile Layout, Chassis and Transmission: Introduction to Drive Train: Clutch, Gearbox, Hook's Joint, Propeller /Drive Shaft, Slip Joint, Final Drive and Differential, Front and Rear Axles, Wheels and Tires, Control systems: Introduction to Steering and Brakes. Electrical system: Introduction to Starting System, Ignition, dynamo/alternator, cut-out and wiring. Automobile Body: Parts and Stream lining, Automobile types: Front, Rear and Four wheel drive and Automotive materials

Engine (Power Plant): Multi cylinder engine parts, Classification: 'In-line' and 'V' type, Multi-Valve Engines, Super Charging/Turbo charging, Air filters, Fuel Systems: Petrol Engines: Carbureted and MPFI, Ignition Systems: Conventional and Electronic, Diesel Engines: Conventional, CRDI and Dual Fuel engines., Performance, Combustion and Exhaust Emissions, Air pollution and their control: EGR and Catalytic Converters, EURO/Bharat Stage Norms: I, II, III, IV and V., Manifolds and Mufflers, Engine Cooling and Lubrication.

Clutch: Necessity, Clutch Assembly: Construction and Working Principle, Types: Single and Multiple Plates, Free-Play, Fluid coupling/Torque converter, Clutch Troubles and Remedies.

Gearbox: Necessity of Transmission, Construction and Working Principle, Selector Mechanism, Types: Sliding mesh, Constant mesh, Synchromesh, and Epicyclical. Three, Four and Five- Speed Gearbox, Overdrive, Automatic Gearbox, Gearbox Troubles and remedies.

Drive shaft and Final Drive: Drive Shaft: Constructional Features. Universal/Hooks Joints, Slip Joint, and Working Principle., Types of Propeller shafts, Final drive and Differential: Necessity, Constructional Features and Working Principle., Front/Rear Axles: Constructional Features and Types of Rear Axle Floating, Wheels: Disc and Drum type, Tires: Tire Construction, Tube and Tubeless Tires, Radial Tires, Tire specification, Tire rotation and Tire Maintenance.

Suspension System and Vehicle Control: Coil and Leaf Springs, Shock absorbers, Wheel alignment: Kingpin angle, Caster, Camber, Toe-in, and Toe-out., Necessity of vehicle control, Steering Mechanism and its Elements: Steering gear box and its types, Steering gear ratio, Constant Velocity Joints and linkages. Power Steering, Brake system: Necessity, Parking and Power Brakes, Parts and Working Principle of Mechanical, Air and. Hydraulic Brakes: Master and Wheel cylinder, Properties of Brake Fluids, Brake Diagnostics and Service: Brake Bleeding, Anti-lock Braking System, Automobile Accessories and Tips for Safe Driving.

Electrical and Electronic Systems: Battery, Starting system, ECU/ ECM.

Trouble shooting and Maintenance: Engine and Vehicle Troubles: Diagnostic Information: Symptom descriptions and their Causes and Remedies, Periodic, Preventive and Break down Maintenance: Engine tuning, Fuel and Air filters, Lubricants, Maintenance of Battery and Electrical/Electronic System, and Tires. The Motor Vehicle Act (India).

SYLLABUS: AUTOMOBILE ENGINEERING AND HYBRID VEHICLES (B17ME4103)

(Elective-III)

UNIT-I

Introduction to Automobile, Automobile Layout, Chassis and body, Power unit- types of automobile engines, engine parts. Classification: 'In-line' and 'V' type, Multi-Valve Engines. Super Charging/Turbo charging, Air filters, Fuel Systems: Petrol Engines: Carbureted and MPFI, Ignition systems: Conventional and Electronic, Diesel Engines: Conventional, CRDI and Dual fuel Engines, Engine Cooling and Lubrication

UNIT-II

Clutches: principle, Types: cone clutch, single plate clutch, diaphragm clutch, multi plate clutch, centrifugal clutches and fluid coupling. Gearbox: Construction and Working Principle, Selector Mechanism, Types: Sliding mesh, Constant mesh, Synchromesh, and Epicyclical, Overdrive, Automatic Gearbox-CVT. Torque converter. Drive shaft and Final Drive: Drive Shaft. Types of Propeller shafts, Final drive and Differential, Power transmission: Front, Rear and Four wheel drive.

UNIT-III

Suspension System: Leaf springs, coil springs, torsion bar, shock absorber, Independent suspension system. Steering System: Steering geometry: camber, caster, Kingpin angle, Toe-in, and Toe-out. Steering Mechanism and its Elements: Steering gear box and its types, Steering gear ratio, Power-Steering Wheels: Disc and Drum type, Tires: Tire Construction, Tube and Tubeless Tires, Radial Tires, Tire specification, Tire rotation and Tire Maintenance.

UNIT-IV

Braking System: Necessity, Parking and Power Brakes, Parts and Working Principle of Mechanical, Air and. Hydraulic Brakes: Master and Wheel cylinder, Properties of Brake Fluids, Brake Diagnostics and Service: Brake Bleeding, Anti-lock Braking System. Air pollution and their control: EGR and Catalytic Converters, EURO/Bharat Stage Norms, Mufflers. Electrical and Electronic system: Starting System, Ignition system, battery, ECU/ ECM.

UNIT-V

Hybrid Vehicles: History and Introduction of Hybrid Vehicles, Components in hybrid vehicles, Classification of hybrid topologies- Driveswin structure, Degree of hybridization, Nature of the power source, Advantages and Disadvantages, Applications. Trouble shooting and Maintenance: Engine and Vehicle Troubles: Diagnostic Information, Symptom descriptions and their Causes and Remedies, Maintenance - Periodic, Preventive and Break down.

M. Jagapathi Raju

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Dept. of Mechanical Engg.
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13) Resolved to offer 1 program Elective (Program Elective -V) with 3 Courses in Each elective along with MOOCS-I for 2/2 M.Tech CAD/CAM Third Semester, program under R19 Regulation.

MECHANICAL ENGINEERING (CAD/CAM)
(Under Choice Based Credit System / Elective Course System)
SCHEME OF INSTRUCTION & EXAMINATION
(With effect from 2019-20 admitted Batch onwards)

Course Code	Course Name	Category	Cr.	L	T	P	Int. Marks	Ext. Marks	Total Marks
#PE-V/ MOOCS	Program Elective-V	PE	3	3	0	0	25	75	100
#OE/MOOCS	Open Elective	OE	3	3	0	0	25	75	100
M19CAD2106	Dissertation-I / Industrial Project	PR	10	0	0	20	50	50	100
TOTAL			16	6	0	20	100	200	300

	Course Code	Course
#PE-V/ MOOCS	M19CAD 2101	Non Destructive Evaluation
	M19CAD 2102	Quality Engineering
	M19CAD 2103	Green Manufacturing
	M19CAD 2104 (MOOCS-I)	Students Going for Industrial Project / Thesis will complete these courses through MOOCS. Students can also choose SWAYAM or NPTEL with a 12 weeks' course duration in PG level with 3 credits, but the chosen subject should not be covered in their M. Tech Course
#OE/ MOOCS	#OE	Students have to choose one open elective course offered by departments other than the parent department. List of open Electives offered by other departments are enclosed.
	M19CAD 2105 (MOOCS-II)	Students Going for Industrial Project / Thesis will complete these courses through MOOCS. Students can also choose SWAYAM or NPTEL with a 12 weeks' course duration in PG level with 3 credits, but the chosen subject should not be covered in their M. Tech Course

OPEN ELECTIVES OFFERED TO OTHER DEPARTMENTS	
M19CAD 2107	Operations Research
M19CAD 2108	Nano Technology
M19CAD 2109	Product Design & Manufacturing

14) Resolved to offer the following Courses under open Elective Category (offered to other programs) for 2/2 M.Tech CAD/CAM Third Semester program under R19 Regula

S.NO.	Open Elective Course Name
1	Operations Research
2	Nano Technology
3	product Design & Manufacturing
4	MOOCS - II

OPEN ELECTIVES OFFERED TO OTHER DEPARTMENTS	
M19CAD 2107	Operations Research
M19CAD 2108	Nano Technology
M19CAD 2109	Product Design & Manufacturing

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(05) Finalized the Course Structure and Syllabus for the 2/2 M.Tech CAD/CAM Third & Fourth Semester Program under R19 Regulations.

Regulation: R19		II / IV - M.Tech. I - Semester							
MECHANICAL ENGINEERING(CAD/CAM) (Under Choice Based Credit System / Elective Course System)									
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2019-20 admitted Batch onwards)									
Course Code	**Course Name**	**Category**	**Cr.**	**L**	**T**	**P**	**Int. Marks**	**Ext. Marks**	**Total Marks**
#PE-V/ MOOCS	Program Elective-V	PE	3	3	0	0	25	75	100
#OE/MOOCS	Open Elective	OE	3	3	0	0	25	75	100
M19CAD210o	**Dissertation-I / Industrial Project**	PR	10	0	0	20	50	50	100
TOTAL			**16**	**6**	**0**	**20**	**100**	**200**	**300**

Regulation: R19		II / IV - B.Tech. II - Semester							
MECHANICAL ENGINEERING (CAD/CAM) (Under Choice Based Credit System / Elective Course System)									
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2019-20 admitted Batch onwards)									
Course Code	**Course Name**	**Category**	**Cr.**	**L**	**T**	**P**	**Int. Marks**	**Ext. Marks**	**Total Marks**
M19CAD322 01	Dissertation-II /Industrial Project	PR	16	0	0	32	--	100	100

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P. Nagaraju Raju

PRINCIPAL
S.R.K.R. Engg. College
BHIMAVARAM-534 204.

MEETING-2

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE(A)
CHINNA AMIRAM :: BHIMAVARAM-534204
DEPARTMENT OF MECHANICAL ENGINEERING

Dt: 18-09-2021

CIRCULAR

This is to inform you that the Department of Mechanical Engineering will hold a meeting on 19-09-2021 at 11.00 AM in Room No. M-109 (HOD Room) virtually (using zoom virtual meeting platform). In this connection, all the members of the Board of Studies are requested to attend the same.

Agenda:

1. To discuss and finalize course structure and syllabus for 3/4 - B.Tech Mechanical Engineering program under R-19 regulations.
2. To discuss and finalize course structure and syllabus for 2/4 – B.Tech Mechanical Engineering program , under R-20 regulations.
3. To discuss and finalize syllabus for Design Drawing and Visualization Course for 1/4 B.Tech Computer Science and Design program under R-20 regulations.

Head of the Department
Professor & Head
Dept. of Mechanical Engg.
S.R.K.R. Engineering College
CHINA AMIRAM (P.O.)
BHIMAVARAM-534 204.

C.C to:

1. The Members of Board of studies
2. Office file

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MINUTES OF THE MEETING

Ninth Board of studies meeting in virtual Mode (using ZOOM platform) was held on 19-09-2021 in M109 (Head Room) of Mechanical Engineering Department at 11:00 AM inorder to discuss the following items:

(1) Discussion and Finalization of Course structure and Syllabus of 3/4 B.Tech Mechanical Engineering program under R19 Regulations.

(2) Discussion and Finalization of Course structure and Syllabus of 2/4 B.Tech Mechanical Engineering program under R20 Regulations.

(3) Discussion and Finalization of Syllabus for Design Drawing and Visualization Course for 1/4 B.Tech. Computer Science and Design program under R20 Regulations.

H. Jagapathi Raju

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MINUTES OF THE MEETING RESOLUTIONS

(1) Resol: Discussed about Feedbacks from students, Alumni, Employers and parents on Curriculum while Designing the Course structure and Syllabus for 3/4 B.Tech & 2/4 B.Tech Mechanical Engineering Program.

(2) Resolved to offer Design Drawing and Visualization Course for 1/4 B.Tech Computer Science and Design program in the second Semester under R20 Regulations. and also Discussed and Finalized the Syllabus for the same Course.

(3) One of the BOS Members DR A GOPALA KRISHNA, Professor Dept of Mech Engg. JNTUK, Suggested to add a topic "Hydraulic Circuits" in UNIT-V of Fluid Mechanics & Hydraulic Machines Course.

(4) Resolved to offer the following SKill Oriented Courses for 2/4 B.Tech (R20) Mech. Engg. program

S.NO.	Course Name	Credits	Semester
1.	Modelling Using 3D Experience	2	First
2.	Advanced Surface and Assembly modeling using CATIA	2	Second

(5) Resolved to offer the following Courses in addition to Regular curriculum for 2/4 B.Tech (R20) Mech. Engg. program

S.NO.	Course Name.	Semester
1	Professional Ethics and Human values	First
2	English proficiency	Second

(6) Finalized the Course Structure and Syllabus for the 2/4 B.Tech (R20) Mechanical Engg. program.

(7) One of the BOS Members Dr. P.V.S GANESH KUMAR, Senior Scientist, NSTL Visakhapatnam, Suggested to add a topic "Applications of Gas Turbines" in UNIT-V of I C Engines and Gas Turbines Course.

(8) One of the BOS Members Dr. K VENKATA SUBBAIAH, Senior Professor, Dept. of Mech. Engg., A.V. College of Engineering(W), Andhra University, Suggested to add a topic "Fore Casting

Errors" in production planning and control course.

(9) one of the BOS Members Dr. G RAVI KIRAN SASTRY, Professor, Dept. of Mech. Engg., NIT Andhra pradesh, Suggested to add a topic "Introduction to Natural Fibers" in UNIT-II of Composite Materials Course.

(10) Resolved to offer the following Courses in addition to Regular Curriculum for 3/4 B.Tech (R19) Mech. Engg. Program.

S.NO.	Course Name	Semester
1	Employability Skills-I	First
2	Employability Skills-II	Second
3	Basic coding	Second.

(11) Resolved to offer 2 Program Electives [Program Elective-I and Program Elective-II] with 3 Courses + 1 MOOCs in Each Program Elective for 3/4 B.Tech (R19) Mech. Engg. Program.

(12) Resolved to offer the following Courses under the Open Elective-I Category (Offered to other Programs) for 3/4 B.Tech-II semester Mech. Engg. Program under R19 Regulati

S.NO.	Open Elective Course Name
1	Operations Research.
2	Operations Management
3	Total Quality Management.

(13) Finalized the course structure and syllabus for the 3/4 B.Tech (R19) Mechanical Engg. Program.

M. Jagapathi Raju

PRINCIPAL
S.R.K.R. Engg. College
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MEMBERS PRESENT

S.NO	NAME OF THE MEMBER	DESIGNATION
01	Dr. P.V.S. GANESH KUMAR	Senior Scientist NSTL, VISAKHAPATNAM
02	Dr. K. VENKATA SUBBAIAH	Prof & Head, Dept. of Mech. Engg. AUCE, Andhra University VISAKHAPATNAM
03	Dr. A. GOPALA KRISHNA	Prof & Director R&D, UCE JNTUK, Kakinada.
04	Dr. G. RAVI KIRAN SASTRY	professor in Dept. of M.E. NITAP, Tadepalligudem.
05	Dr. K. BRAHMA RAJU (Chairman)	Professor & Head, DME
06.	prof. N.V. SUBBA RAJU	Professor
07.	Dr. A. BALA KRISHNA	Professor
08	Dr. V. DURGA PRASADA RAO	professor
09	Dr. P. RAMA MURTY RAJU	Professor.
10	Dr. K. SURESH BABU	Professor
11	Dr. K.V. MURALI KRISHNAM RAJU	Professor
12	Sri CH. SRINIVAS	Associate professor
13	Sri. V.K. VISWANADHA RAJU	Associate professor
14.	Sri. C.R.K. RAJU	Associate professor
15.	Sri. CH. GOPALA RAJU	Associate professor
16.	Sri. P.V.R.S. PADMA RAJU	Associate professor
17.	Sri. G. CHATAPATHI RAJU	Associate professor
18.	Dr. S. RAJESH	Associate professor
19.	Dr. K. SITA RAMA RAJU	Associate professor
20.	K. Bhaskara Rama Krishna	M.Tech Student
21.	P. SURYA TEJA	B.Tech Student

P. Jagapathi Raju

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Professor & Head
Dept. of Mechanical Engg
S.R.K.R. Engineering College
CHINAAMIRAM (P.O.)
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RESOLUTIONS FOR THE MEETING DATED 19-09-2021

(1) Resol: Discussed about Feedbacks from students, Alumni, Employers and parents on Curriculum while Designing the Course structure and Syllabus for 3/4 B.Tech & 2/4 B.Tech Mechanical Engineering Program.

Feedback Analysis 2020-21

A feedback on the curriculum is obtained from students, employers, faculty and alumni. After study of the feedback form various stake holders some important points of the feedback are identified. Total 308 feedback forms have been obtained from various stake holders.

The following are the key points obtained from the study of the feedback:

1. Strong research groups needed to be formed within the department in time with the present industrial needs
2. Students should be trained to explore and understand emerging technologies
3. All round development of the interpersonal and communicational skills to be encouraged
4. Students are to be provided with academic flexibility to give a wide spectrum of multi-disciplinary exposure
5. The curriculum also needs to include subjects like moral ethics and responsibilities which are much needed for present generation
6. More hands-on experience to be provided to students to link theory with practice
7. According to the competence outside we can increase the depth of the syllabus. It may load the students but increases the standards
8. Better to decrease quantity and increase quality
9. Better to include a mini project in 3rd year
10. Give priority to sports
11. Can add python language in first year
12. Introduce software courses in every semester
13. Industrial tours are required
14. Put more programming courses as elective subjects
15. Include new technologies in the syllabus
16. Library stock should be increased
17. Mechanical engineering related excellency centres must be established

Professor & Head
Dept. of Mechanical Engg
S.R.K.R. Engineering College
Head of the Department
BHIMAVARAM-534 204

(2) Resolved to offer Design Drawing and Visualization Course for 1/4 B.Tech Computer Science and Design program in the second semester under R20 Regulations. and also Discussed and Finalized the Syllabus for the Same Course.

Regulation: R20		I / IV - B.Tech. II - Semester							
COMPUTER SCIENCE AND DESIGN									
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2021-22 admitted batch onwards)									
Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 BS 1201	Mathematics-II	BS	3	3	0	0	30	70	100
B20 BS 1202	Applied Physics	BS	3	3	0	0	30	70	100
* B20 CD 1201	Python Programming	ES	3	2	0	0	30	70	100
				0	0	2	15	35	50
B20 ME 1205	Design Drawing & Visualization	ES	3	1	0	4	30	70	100
B20 CS 1203	Data Structures	ES	3	3	0	0	30	70	100
B20 CD 1203	Design Thinking and Innovation lab	ES	1.5	0	0	3	15	35	50
B20 BS 1207	Applied Physics Lab	BS	1.5	0	0	3	15	35	50
B20 CS 1206	Data Structures & Algorithms Lab	ES	1.5	0	0	3	15	35	50
B20 MC 1202	Professional Ethics & Human values	MC	0	2	0	0	--	--	--
B20 MC 1203	National Service Scheme (NSS)	MC	0	0	0	2	--	--	--
		TOTAL	19.5	14	0	17	210	490	700

Note: *- Integrated course and its evaluation guide lines are mentioned in the Syllabus

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (AUTONOMOUS)

ChinnaAmiram, Bhimavaram-534204. (AP)

ESTD: 1980

COMPUTER SCIENCE AND DESIGN

SYLLABUS: DESIGN DRAWING AND VISUALIZATION (B20ME1205)

UNIT-I: Introduction to Design Drawing: Geometrical Constructions, Polygons: Constructing regular polygons by general methods, inscribing and describing polygons on circles. Engineering Curves: Parabola, Ellipse and Hyperbola by using general method only, cycloids, involutes, tangents & normals for the curves.

UNIT-II: Orthographic Projections: Reference plane, importance of reference lines, projections of points in various quadrants, projections of lines, line parallel to both the planes, line parallel to one plane and perpendicular to other plane, line parallel to one plane and inclined to other plane. Projections of straight lines inclined to both the planes, determination of true lengths and angle of inclination.

UNIT-III: Projections of planes: Regular planes perpendicular to one reference plane and parallel to other, planes perpendicular to one reference plane and inclined to the other reference plane; planes inclined to both the reference planes.

Projections of Solids – Prisms, Pyramids, Cones, and Cylinders with the axis inclined to one of the reference planes.

UNIT-IV : Isometric Projections: Introduction to Isometric projection and Isometric projection of simple Right and Regular Solids – Prism, Cylinder, Pyramid and Cone. Conversion of isometric views to orthographic views; Conversion of orthographic views to isometric views.

UNIT-V: Perspective Projections: Introduction to perspective projection and Perspective projections of points, lines, planes, and solids (using visual ray method). Perspective projection of solids using vanishing point method.

Visualization using AutoCAD: Computer Aided Drafting. Drawing practice using Auto CAD, Creating 2D&3D drawings of objects using Auto CAD (Only for Demonstration Purpose)

M. Jagapathi Raju

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Dept. of Mechanical Engg.
S.R.K.R. Engineering College

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(3.) One of the BoS Members Dr. A GOPALA KRISHNA, Professor Dept. of Mech. Engg. JNTUK, Suggested to add a topic "Hydraulic Circuits" in UNIT-V of Fluid Mechanics & Hydraulic Machines Course.

SYLLABUS: FLUID MECHANICS (B19ME2204)

UNIT-I: Properties of fluids- Introduction-Viscosity- Pressure and its measurement, Absolute, Gauge, Atmospheric and Vacuum pressure – Manometers, Simple manometers, Differential manometers. Hydrostatic forces on surfaces- Total Pressure and Pressure Centre- Vertical, Horizontal, inclined and curved plane surfaces submerged in liquid- Buoyancy and Flotation

UNIT-II: Fluid Kinematics & Fluid Dynamics. Types of fluid flow- Continuity equation- Velocity potential function and Stream Function- Types of Motion, Linear Translation, Linear deformation. Angular deformation, Rotation, free and forced vortex flow – Euler's equation -Bernoulli's equation and its applications-Venturimeter, Orifice Meter, Pitot tube-Momentum Equation.

UNIT-III: Flow through pipes: Hagen Poiseuille equation- Reynolds experiment - Loss of head due to friction in pipes, Darcy Weisbach equation, Chezy's equation - Minor losses in pipes - pipes in series and pipes in parallel, total energy line-hydraulic gradient line. Flow through branched pipes.
Dimensional and Modeling Analysis: Fundamental and derived dimensions- Dimensionless groups- Rayleigh method- Buckingham's π-theorem- Model Analysis - Types of similarity- Geometric, Kinematic and Dynamic similarities- Dimensionless numbers- ModelLaws.

UNIT-IV: Laminar Boundary Layer: Definition- Laminar Boundary Layer- Turbulent BoundaryLayer - Laminar sub layer- Boundary layer thickness-Displacement thickness, Momentum thickness and Energy thickness-Momentum integral equation- Flow over a flat plate.
Turbulent Boundary Layer: Laminar, turbulent, transition- Momentum equations and Reynold's stresses- Fully developed turbulent flow through a pipe- Turbulent boundary layer on a flat plate- Laminar sub-layer- Boundary layer separation and control.

UNIT-V: Compressible Fluid Flow: Thermodynamic relations- Continuity, Momentum and Energy equations- Velocity of sound in a compressible fluid- Mach number and its significance- Limits of incompressibility- Pressure field due to a moving source of disturbance- Propagation of pressure waves in a compressible fluids-Stagnation properties- Stagnation pressure, Temperature and density- Area velocity relationship for compressible flow.

UNIT-I (10Hrs)	**Fluid Statics:** Properties of fluids, mass density, specific volume, specific gravity, viscosity, compressibility and surface tension, Newton law of viscosity. Pressure at a point, Measurement of pressure- Piezometer, U-tube and differential tube manometers,Buoyancy and floating, Meta-centre.
UNIT-II (10 Hrs)	**Fluid Kinematics:** Introduction, methods of describing the fluid motion, Classification of flows, velocity and acceleration equations, Stream line, path line and streak lines and stream tube, continuity equation, Stream function, velocity potential function, introduction to free and forced vortex flows. **Fluid Dynamics:** Surface and body forces – Euler's and Bernoulli's equation, Measurement of flow through Venturimeter, Orifice meter and Pitot tube.
UNIT-III (10 Hrs)	**Flow Through Pipes:**Reynolds experiment - Darcy Weisbach equation - Minor losses in pipes - pipes in series and pipes in parallel -total energy line-hydraulic gradient line. **Boundary Layer Theory:** Development of boundary layer along a thin flat plate, laminar boundary layer and turbulent boundary layer, Laminar sub layer, boundary layer separation and its control.
UNIT-IV (10 Hrs)	**Impact of Jets:** Hydrodynamic force of jets on stationary and moving vanes, velocity diagrams, work done and efficiency.Flat, inclined and curved vanes - jet striking centrally and at tip, flow over radial vanes. **Hydraulic Turbines:** Classification of turbines, impulse and reaction turbines, Pelton wheel, Francis turbine and Kaplan turbine-working proportions, work done, efficiencies, draft tube theory, functions and efficiency. Performance of hydraulic turbines, geometric similarity, specific speed, unit quantities, characteristic curves.
UNIT-V (10 Hrs)	**Hydraulic Pumps** **Centrifugal pumps:** classification, working, work done, monometric head, losses and efficiency, Minimum starting speed, specific speed – pumps in series and parallel – performance characteristic curves, cavitation. **Reciprocating Pumps:** Types, working principle, Power required by a Reciprocating pump, Coefficient of discharge, Slip and negative slip, Effect of acceleration of piston on velocity and pressure in suction and delivery pipes, Indicator diagram, Definition and purpose of air vessels.

(4.) Resolved to offer the following Skill Oriented Courses for 2/4 B.Tech (R20) Mech. Engg. program

S.No.	Course Name	Credits	Semester
1.	Modelling Using 3D Experience	2	First
2.	Advanced Surface and Assembly Modeling using CATIA	2	Second

Regulation: R20	II / IV - B.Tech. I - Semester
MECHANICAL ENGINEERING	
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2020-21 admitted Batch onwards)	

Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 BS 2102	Numerical Methods and Advanced Calculus	BS	3	3	0	0	30	70	100
B20 ME 2101	Engineering Thermodynamics and IC Engines	BS	3	3	0	0	30	70	100
B20 ME 2102	Manufacturing Processes	PC	3	3	0	0	30	70	100
B20 ME 2103	Strength of Materials	PC	3	3	0	0	30	70	100
B20 HS 2101	Managerial Economics and Financial Accountancy	HS	3	3	0	0	30	70	100
B20 ME 2104	Machine Drawing	PC	1.5	0	0	3	30	70	100
B20 ME 2105	Strength of Materials Lab	PC	1.5	0	0	3	15	35	50
B20 ME 2106	Manufacturing Processes Lab	PC	1.5	0	0	3	15	35	50
B20 ME 2107	Modeling using 3D Experience	SOC	2	1	0	2	--	50	50
B20 MC 2102	Professional Ethics and Human Values	MC	0	2	0	0	--	--	--
		TOTAL	21.5	18	0	11	210	540	750

Regulation: R20	II / IV - B.Tech. II - Semester
MECHANICAL ENGINEERING	
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2020-21 admitted Batch onwards)	

Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20BS 2203	Operations Research	BS	3	3	0	0	30	70	100
B20ME 2201	Fluid Mechanics and Hydraulic Machines	PC	3	3	0	0	30	70	100
B20 ME 2202	Applied Thermodynamics	PC	3	3	0	0	30	70	100
B20ME 2203	Metal Cutting and Machine Tools	PC	3	3	0	0	30	70	100
B20ME 2204	Kinematics of Machinery	PC	3	3	0	0	30	70	100
B20ME 2205	Fluid Mechanics and Hydraulic Machines Lab	PC	1.5	0	0	3	15	35	50
B20ME 2206	Machine Tools Lab	PC	1.5	0	0	3	15	35	50
B20ME 2207	Mechanical Engineering Lab	PC	1.5	0	0	3	15	35	50
B20ME 2208	Advanced Surface and Assembly Modeling using CATIA	SOC	2	1	0	2	--	50	50
B20 MC 2201	English Proficiency	MC	0	2	0	0	--	--	--
		TOTAL	21.5	18	0	11	195	505	700

H. Nagaraju Garu

PRINCIPAL
S.R.K.R. Engg. College
BHIMAVARAM-534 204.

Professor & Head
Dept. of Mechanical Engg.
S.R.K.R. Engineering College
CHINA AMIRAM (P.O.)
BHIMAVARAM-534 204.

(5) Resolved to offer the following Courses in addition to Regular curriculum for 2/4 B.Tech (R20) Mech. Engg. program

S.No.	Course Name.	Semester
1	Professional Ethics and Human values	First
2	English proficiency	Second

Regulation: R20	II / IV - B.Tech. I - Semester

MECHANICAL ENGINEERING

SCHEME OF INSTRUCTION & EXAMINATION
(With effect from 2020-21 admitted Batch onwards)

Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 BS 2102	Numerical Methods and Advanced Calculus	BS	3	3	0	0	30	70	100
B20 ME 2101	Engineering Thermodynamics and IC Engines	ES	3	3	0	0	30	70	100
B20 ME 2102	Manufacturing Processes	PC	3	3	0	0	30	70	100
B20 ME 2103	Strength of Materials	PC	3	3	0	0	30	70	100
B20 HS 2101	Managerial Economics and Financial Accountancy	HS	3	3	0	0	30	70	100
B20 ME 2104	Machine Drawing	PC	1.5	0	0	3	30	70	100
B20 ME 2105	Strength of Materials Lab	PC	1.5	0	0	3	15	35	50
B20 ME 2106	Manufacturing Processes Lab	PC	1.5	0	0	3	15	35	50
B20 ME 2107	Modeling using 3D Experience	SOC	2	1	0	2	--	50	50
B20 MC 2102	Professional Ethics and Human Values	MC	0	2	0	0	--	--	--
		TOTAL	21.5	18	0	11	210	540	750

Regulation: R20	II / IV - B.Tech. II - Semester

MECHANICAL ENGINEERING

SCHEME OF INSTRUCTION & EXAMINATION
(With effect from 2020-21 admitted Batch onwards)

Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20BS 2203	Operations Research	BS	3	3	0	0	30	70	100
B20ME 2201	Fluid Mechanics and Hydraulic Machines	PC	3	3	0	0	30	70	100
B20 ME 2202	Applied Thermodynamics	PC	3	3	0	0	30	70	100
B20ME 2203	Metal Cutting and Machine Tools	PC	3	3	0	0	30	70	100
B20ME 2204	Kinematics of Machinery	PC	3	3	0	0	30	70	100
B20ME 2205	Fluid Mechanics and Hydraulic Machines Lab	PC	1.5	0	0	3	15	35	50
B20ME 2206	Machine Tools Lab	PC	1.5	0	0	3	15	35	50
B20ME 2207	Mechanical Engineering Lab	PC	1.5	0	0	3	15	35	50
B20ME 2208	Advanced Surface and Assembly Modeling using CATIA	SOC	2	1	0	2	--	50	50
B20 MC 2201	English Proficiency	MC	0	2	0	0	--	--	--
		TOTAL	21.5	19	0	11	195	505	700

(6) Finalized the Course Structure and Syllabus for the 2/4 B.Tech (R20) Mechanical Engg. program.

Regulation: R20	II / IV - B.Tech. I - Semester

MECHANICAL ENGINEERING

SCHEME OF INSTRUCTION & EXAMINATION
(With effect from 2020-21 admitted Batch onwards)

Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 BS 2102	Numerical Methods and Advanced Calculus	BS	3	3	0	0	30	70	100
B20 ME 2101	Engineering Thermodynamics and IC Engines	ES	3	3	0	0	30	70	100
B20 ME 2102	Manufacturing Processes	PC	3	3	0	0	30	70	100
B20 ME 2103	Strength of Materials	PC	3	3	0	0	30	70	100
B20 HS 2101	Managerial Economics and Financial Accountancy	HS	3	3	0	0	30	70	100
B20 ME 2104	Machine Drawing	PC	1.5	0	0	3	30	70	100
B20 ME 2105	Strength of Materials Lab	PC	1.5	0	0	3	15	35	50
B20 ME 2106	Manufacturing Processes Lab	PC	1.5	0	0	3	15	35	50
B20 ME 2107	Modeling using 3D Experience	SOC	2	1	0	2	--	50	50
B20 MC 2102	Professional Ethics and Human Values	MC	0	2	0	0	--	--	--
		TOTAL	21.5	18	0	11	210	540	750

Regulation: R20	II / IV - B.Tech. II - Semester

MECHANICAL ENGINEERING

SCHEME OF INSTRUCTION & EXAMINATION
(With effect from 2020-21 admitted Batch onwards)

Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20BS 2203	Operations Research	BS	3	3	0	0	30	70	100
B20ME 2201	Fluid Mechanics and Hydraulic Machines	PC	3	3	0	0	30	70	100
B20 ME 2202	Applied Thermodynamics	PC	3	3	0	0	30	70	100
B20ME 2203	Metal Cutting and Machine Tools	PC	3	3	0	0	30	70	100
B20ME 2204	Kinematics of Machinery	PC	3	3	0	0	30	70	100
B20ME 2205	Fluid Mechanics and Hydraulic Machines Lab	PC	1.5	0	0	3	15	35	50
B20ME 2206	Machine Tools Lab	PC	1.5	0	0	3	15	35	50
B20ME 2207	Mechanical Engineering Lab	PC	1.5	0	0	3	15	35	50
B20ME 2208	Advanced Surface and Assembly Modeling using CATIA	SOC	2	1	0	2	--	50	50
B20 MC 2201	English Proficiency	MC	0	2	0	0	--	--	--
		TOTAL	21.5	18	0	11	195	505	700

(7) One of the BoS Members DR. P.V.S. GANESH KUMAR, Senior Scientist, NSTL Visakhapatnam, Suggested to add a topic "Applications of Gas Turbines" in UNIT-V of I C Engines and Gas Turbines Course.

IC ENGINES & GAS TURBINES

(For ME)

B19ME3101

UNIT-V (10 Hrs)	Gas Turbines: Simple gas turbine plant- Ideal cycle, closed cycle and open cycle for gas turbines Efficiency, work ratio and optimum pressure ratio for simple gas turbine cycle- Parameters of performance- Actual cycle, regeneration, Inter-cooling and reheating, closed and semi-closed cycle Jet propulsion and Rockets, Applications of Gas Turbines.

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(8) One of the BOS Member Dr. K. VENKATA SUBBAIAH, Senior Professor, Dept. of Mech. Engg., A.U. College of Engineering (A), Andhra University, suggested to add a topic "Forecasting Errors" in production planning and control course.

PRODUCTION PLANNING AND CONTROL

(Program Elective-I)

(For ME)

B19ME3206

SYLLABUS

UNIT-I (10Hrs)	**Introduction:** Definition – Objectives of production Planning and Control – Functions of production planning and control – Types of production – Organization of production planning and control department.
UNIT-II (10 Hrs)	**Forecasting:** Importance – Types of forecasting– Forecasting techniques – qualitative methods and quantitative methods, Forecasting errors
UNIT-III (10 Hrs)	**Inventory management:** Functions of inventories – relevant inventory costs – EOQ model – Inventory control systems: Fixer order quantity system and Periodic review system - ABC analysis -VED analysis- Material Requirement Planning, Bill of material, MRP II - Master Production Scheduling.
UNIT-IV (10 Hrs)	**Aggregate planning:** Chase planning, Expediting, controlling aspects. Routing: Definition – Routing procedure –Route sheets — Factors affecting routing, procedure – Difference with loading
UNIT-V (10 Hrs)	**Scheduling:** Policies – Types of scheduling - Forward and Backward Scheduling – Gantt Charts – Flow shop Scheduling – n jobs and 2 machines, n jobs and 3 machines – Job shop Scheduling – 2 jobs and n machines – Line of Balance. **Dispatching:** Activities of dispatcher – Dispatching procedure – follow up – priority rules for dispatching jobs - Applications of computer in production planning and control.

(9) One of the BOS Members Dr. G. RAVI KIRAN SASTRY, Professor, Dept. of Mech. Engg, NIT Andhra Pradesh, suggested to add a topic "Introduction to Natural Fibers" in UNIT-II of Composite Materials Course.

COMPOSITE MATERIALS

(Program Elective-I)

(For ME)

B19ME3204

UNIT-I (10 Hrs)	**INTRODUCTION:** Definition, Classification of Composite materials based on structure and based on matrix. Advantages of composites, application of composites, functional requirements of reinforcement and matrix.
UNIT-II (10 Hrs)	**FIBERS:** Preparation, properties and applications of glass fibers, carbon fibers, Kevlar fibers and metal fibers, properties and applications of whiskers, particle reinforcements. Introduction to natural fibers.
UNIT-III (10 Hrs)	**MANUFACTURING OF ADVANCED COMPOSITES:** Polymer matrix composites: Preparation of Moulding compounds and pre-pegs, hand layup method, Autoclave method. Filament winding method, Compression moulding, Reaction injection moulding.
UNIT-IV (10 Hrs)	**MANUFACTURING OF METAL MATRIX COMPOSITES:** Casting, Solid State diffusion technique, Cladding - Hot isostatic pressing. Manufacturing of Ceramic Matrix Composites: Liquid Metal Infiltration, Liquid phase sintering. Manufacturing of Carbon – Carbon composites: Knitting, Braiding, Weaving.
UNIT-V (10 Hrs)	**RESPONSE OF COMPOSITES TO STRESS:** (a) Iso Strain condition (b) Iso Stress condition (c) Load friction shared by the fibers. **MICRO MECHANICAL ANALYSIS OF A LAMINA:** Introduction, Evaluation of the four elastic moduli by Rule of mixture, Numerical problems. Macro Mechanics of a Lamina: Hooke's law for different types of materials, Number of elastic constants, Two - dimensional relationship of compliance and stiffness matrix.

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BHIMAVARAM-534 204.

(10) Resolved to offer the following Courses in addition to Regular Curriculum for 3/4 B.Tech (R19) Mech. Engg. Program.

S.No.	Course Name	Semester
1	Employability Skills – I	First
2	Employability Skills – II	Second
3	Basic Coding	Second.

SCHEME OF INSTRUCTION & EXAMINATION
(Regulation R19)
III/IV B.TECH
I-SEMESTER
(With effect from **2019-2020** Admitted Batch onwards)

Subject Code	Name of the Subject	Category	Cr.	L	T	P	Internal Marks	External Marks	Total Marks
B19 HS 3102	Operations Research	HS	3	3	--	--	25	75	100
B19ME 3101	IC Engines & Gas Turbines	PC	3	3	--	--	25	75	100
B19 ME 3102	Kinematics of Machines	PC	3	3	--	--	25	75	100
B19 ME 3103	Design of Machine Elements	PC	3	3	--	--	25	75	100
B19 ME 3104	Fluid Machines & Systems	PC	3	3	--	--	25	75	100
B19 ME 3105	Mechanical Measurements & Metrology	PC	3	3	--	--	25	75	100
B19 ME 3106	IC Engines & Kinematics of Machines Lab	PC	1.5	--	--	3	20	30	50
B19 ME 3107	Metrology Lab	PC	1.5	--	--	3	20	30	50
B19 MC 3101	Employability Skills-I	MC	--	3	--	--	--	--	--
TOTAL			21	21	--	6	190	510	700

SCHEME OF INSTRUCTION & EXAMINATION
(Regulation R19)
III/IV B.TECH
II-SEMESTER
(With effect from **2019-2020** Admitted Batch onwards)

Subject Code	Name of the Subject	Category	Cr.	L	T	P	Internal Marks	External Marks	Total Marks
B19 ME 3201	Industrial Engineering & Management	PC	3	3	--	--	25	75	100
B19 ME 3202	Dynamics of Machines	PC	3	3	--	--	25	75	100
B19 ME 3203	Machine Design	PC	3	3	--	--	25	75	100
# PE-I	Program Elective-I	PE	3	3	--	--	25	75	100
#PE-II	Program Elective-II	PE	3	3	--	--	25	75	100
#OE-I	Open Elective-I	OE	3	3	--	--	25	75	100
B19 ME 3212	Industrial Engineering Lab	PC	1.5	--	--	3	20	30	50
B19 ME 3213	Fluid Mechanics and Machinery Lab	PC	1.5	--	--	3	20	30	50
B19 MC 3201	Employability Skills-II	MC	--	3	--	--	--	--	--
B19 MC 3202	Basic Coding	MC	--	--	--	3	--	--	--
		TOTAL	21	21	--	9	190	510	700

	Course Code	Course
#PE-I	B19 ME 3204	Composite Materials
	B19 ME 3205	Finite Element Analysis
	B19 ME 3206	Production Planning and Control
	B19 ME 3207	MOOCs – I
#PE-II	B19 ME 3208	Automobile Engineering
	B19 ME 3209	Tool Design
	B19 ME 3210	Unconventional Machining Processes
	B19 ME 3211	MOOCs – II
#OE-I	Student has to study one Open Elective offered by CE or CSE or ECE or EEE or IT or EM&H from the list enclosed.	

(11) Resolved to offer 2 Program Electives [Program Elective-I and program Elective-II] with 3 Courses + 1 MOOCs in Each program Elective for 3/4 B.Tech (R19) Mech. Engg. Program.

	Course Code	Course
#PE-I	B19 ME 3204	Composite Materials
	B19 ME 3205	Finite Element Analysis
	B19 ME 3206	Production Planning and Control
	B19 ME 3207	MOOCs – I
#PE-II	B19 ME 3208	Automobile Engineering
	B19 ME 3209	Tool Design
	B19 ME 3210	Unconventional Machining Processes
	B19 ME 3211	MOOCs – II
#OE-I	Student has to study one Open Elective offered by CE or CSE or ECE or EEE or IT or EM&H from the list enclosed.	

(12) Resolved to offer the following Courses under the Open Elective – I Category (Offered to other programs) for 3/4 B.Tech – II semester Mech. Engg. Program under R19 Regulation

S.No.	Open Elective Course Name
1	Operations Research.
2	Operations Management
3	Total Quality Management.

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S.R.K.R. Engg. C..
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(B) Finalized the course structure and syllabus for the 3/4 B.Tech (R19) Mechanical Engg. Program.

Regulation: R20	II / IV - B.Tech. I - Semester

MECHANICAL ENGINEERING

SCHEME OF INSTRUCTION & EXAMINATION
(With effect from 2020-21 admitted Batch onwards)

Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 BS 2102	Numerical Methods and Advanced Calculus	BS	3	3	0	0	30	70	100
B20 ME 2101	Engineering Thermodynamics and IC Engines	ES	3	3	0	0	30	70	100
B20 ME 2102	Manufacturing Processes	PC	3	3	0	0	30	70	100
B20 ME 2103	Strength of Materials	PC	3	3	0	0	30	70	100
B20 HS 2101	Managerial Economics and Financial Accountancy	HS	3	3	0	0	30	70	100
B20 ME 2104	Machine Drawing	PC	1.5	0	0	3	30	70	100
B20 ME 2105	Strength of Materials Lab	PC	1.5	0	0	3	15	35	50
B20 ME 2106	Manufacturing Processes Lab	PC	1.5	0	0	3	15	35	50
B20 ME 2107	Modeling using 3D Experience	SOC	2	1	0	2	--	50	50
B20 MC 2102	Professional Ethics and Human Values	MC	0	2	0	0	--	--	--
		TOTAL	21.5	18	0	11	210	540	750

Regulation: R20	II / IV - B.Tech. II - Semester

MECHANICAL ENGINEERING

SCHEME OF INSTRUCTION & EXAMINATION
(With effect from 2020-21 admitted Batch onwards)

Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20BS 2203	Operations Research	BS	3	3	0	0	30	70	100
B20ME 2201	Fluid Mechanics and Hydraulic Machines	PC	3	3	0	0	30	70	100
B20 ME 2202	Applied Thermodynamics	PC	3	3	0	0	30	70	100
B20ME 2203	Metal Cutting and Machine Tools	PC	3	3	0	0	30	70	100
B20ME 2204	Kinematics of Machinery	PC	3	3	0	0	30	70	100
B20ME 2205	Fluid Mechanics and Hydraulic Machines Lab	PC	1.5	0	0	3	15	35	50
B20ME 2206	Machine Tools Lab	PC	1.5	0	0	3	15	35	50
B20ME 2207	Mechanical Engineering Lab	PC	1.5	0	0	3	15	35	50
B20ME 2208	Advanced Surface and Assembly Modeling using CATIA	SOC	2	1	0	2	--	50	50
B20 MC 2201	English Proficiency	MC	0	2	0	0	--	--	--
		TOTAL	21.5	18	0	11	195	505	700

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SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
China Amiram (P O)::Bhimavaram :: W.G.Dt., A.P., India - 534204

Circular

Date: 25-11-2020

All the members of Common Board of Studies are requested to attend a meeting on 29-11-2020 in online mode at 12.00 pm to 2.00 pm without fail.

AGENDA:

1. To discuss and finalize the syllabus for R20 regulation as per the directions of APSCHE to I/IV B.Tech courses.
2. To discuss about syllabus framing for new courses AI&DS, CSBS.
3. Any other item.

Common BOS Chairman

Professor,
Department of
Engineering Mathematics & Humanities
S.R.K.R. Engineering College
BHIMAVARAM-534 204

S.R.K.R. Engg. College
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29th Nov. 2020.

Minutes of 'Common Board of Studies meeting' held on 29th Nov. 2020.

S.R.K.R. Engineering College, an autonomous institution, located at Chinna Amiram, Bhimavaram, is affiliated to JNTUK, Kakinada. In View of the guidelines issued by AICTE and subsequently by APSCHE, the College decided to go for R-20 regulations from the academic year 2020-21. Because of the COVID-19 pandemic, the meetings of BOS were delayed. The meeting of the Joint Board of Studies, chaired by the Principal of the College is held on 29th Nov. 2020 in online mode. The meeting was attended by experts from Industry, R&D organizations, Professional organizations, Academic institutions, Deans & Heads of the departments of the College and Subject experts from various departments. The meeting commenced at 9AM and discussed various aspects related to the R-20 regulations and related issues.

As a continuation, the meeting of the Common Board, BOS is held, in online mode, in two sessions, of which one is held from 12 Noon to 2PM and the other one from 2.30PM to 5 P.M. In the meetings, all relevant issues related to the Curriculum and Syllabi of B.Tech II/IV Years Commonality, Chaired by Dr C N B Rao, Professor of Mathematics, were discussed. Experts from JNTUK, Kakinada; IIT, Hyderabad, experts from Andhra University, Heads of the relevant departments of the College and members of the department BOS participated in the meetings.

Up to the previous academic year, six programs were offered at the College, namely, CE, CSE, ECE, EEE, IT, ME and from the current academic year (2020-21), two new programs are going to be offered, namely AIDS (Artificial Intelligence and Data Science) and CSBS (Computer Science and Business Systems). The Syllabi for various courses of Commonality are planned as per the guidelines of AICTE, APSCHE, advanced academic institutions and industry; according to the needs of industry, R&D and the societal issues, consisting of basic concepts and applications. The resolutions are as follows:

RESOLUTIONS:

1. Approved the resolutions taken in the Joint Board of Studies meeting held at 9AM regarding the curriculum and academic regulations.
2. Approved the Syllabi of B.Tech I/IV courses pertaining to both first and

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Second Semesters for different programs. The details of the courses for which Syllabi are approved are listed below:

I. Courses related to English

Sl. No.	Program	Course
1.	Common to all (except CSBS)	English-TH.
2.	Common to all (except CSBS)	English Communications Skills Lab
3.	CSBS	Business Communication & Value Science - I Lab.
4.	CSBS	Business Communication & Value Science - II Lab.

II. Courses Related to Mathematics

5.	Common to all (except CSBS)	Mathematics-II (Linear Algebra & Differential equations)
6.	Common to all (except CSBS)	Mathematics-III (Fourier Analysis & Partial differential equations)
7.	CSBS	Discrete Mathematics
8.	CSBS	Introductory topics of Statistics, Probability and Calculus
9.	CSBS	Linear Algebra.
10.	CSBS	Statistical Modelling.
11.	CSBS	Statistical Methods Lab.

III. Courses Related to Physics

12.	Common to CE & ME	Engineering Physics.
13.	Common to CE & ME	Engineering Physics Lab.
14.	Common to AI&DS, CSE, ECE, EEE & IT	Applied Physics
15.	Common to AI&DS, CSE, ECE, EEE & IT	Applied Physics Lab.
16.	CSBS	Fundamentals of Physics.
17.	CSBS	Fundamentals of Physics Lab.

IV. Courses Related to Chemistry

18.	Common to all (except CSBS)	Applied chemistry.
19.	Common to all (except CSBS)	Applied chemistry Lab.

V. Courses related to Management

20.	CSBS	Fundamentals of Economics.

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VI. Mandatory Courses.

21.	Common to all (except CSBS)	Environmental Science.
22.	Common to all (except CSBS)	Professional Ethics and Human Values.
23.	CSBS	Environmental Science.

3. Suggestions from experts:

(i) The University nominees from JNTUK, Kakinada; IIT, Hyderabad; Andhra University, Visakhapatnam and all the Subject experts expressed their satisfaction with the Syllabi.

(ii) Some important Recommendations / Suggestions given by the experts are:

(a) Prof. Deekshitulu, categorically mentioned that, for any B.Tech program, 21 credits should be allotted for Basic Science Courses, of which 12 credits should be earmarked for Mathematics Courses. Then only the Students get necessary knowledge of Mathematics for possessing a B.Tech degree.

(b) Prof. C.S. Sastry also supported Prof. Deekshitulu regarding the credits to be offered for the basic Science Courses and in particular for Mathematics. Both the Professors reiterated about the introduction of minor program in Mathematics for the Engineering Students as well as offering advanced / application oriented Courses in Mathematics as electives.

(c) Prof. Byragi Reddy expressed the feeling that Courses like Environmental Science, presently opted as mandatory courses, be also allotted some credits so that the students learn the Courses with more attention.

Chairman: Dr CNB Rao CNBRao

JNTUK University nominees:

1. Dr G.V.S.R Deekshitulu, Professor of Mathematics, JNTUK
2. Dr C.S.Sastry, Professor of Mathematics, IIT, Hyderabad.
3. Dr L. Manjula Davidson, Professor of English, AU, Visakhapatnam
4. Dr. Ch. Pandaraya Reddy, HOD, AU College of Engineering, Visakhapatnam.
5. Dr. T. Byragi Reddy, Professor of E.S, AU, Visakhapatnam.
6. Dr. Y. Rama Krishna, Prof of Physics, AU College of Engg, AU, Visakhapatnam
7. Dr. K. Rajanbabu, Professor of Chemistry, AU College of Engg, AU, Visakhapatnam

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"Members who participated in the meetings:

Prof. P.A.R.K Raju, Dean, R&D.

1. Prof R. Sivakumar - HoD, Dept of EM&A.
2. Prof. K.V. Ramana murty - HoD, Dept of Engg Physics. K.Ramana Murty
3. Prof. K. Ranga Reddy. HoD, Dept of Engg Chemistry
4. Prof K Suresh Babu T&P Cell.
5. Prof. V. Vasudeva Murty EM&H V Vasudeva murty
6. Prof M N Varma EM&H M. N. Varma
7. Dr G N V Kishore EM&H
8. Dr. G. Sridurga EM&H
9. Dr V. Sitaparvatah. Engg Physics.
10. Ms. P. Bhuvaneswari English, T&P Cell.
11. Dr. K Kiran Kumar Varma EM&H.
12. Dr. P. Raghuram.
13. Dr. G. Sasibabu.

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Course Code	Category	L	T	P	C	I.M	E.M	Exam
B20BS1101	BS	3	--	--	3	30	70	3 Hrs.

MATHEMATICS-I
(LINEAR ALGEBRA AND DIFFERENTIAL EQUATIONS)
(Common to AIDS, CE, CSE, ECE, EEE, IT & ME)

Pre-requisites: Calculus of functions of a single variable and Matrices.

Course Objectives: Students are expected to learn

1.	Concepts of linear algebra and methods of solution of linear simultaneous algebraicequations.
2.	Eigen values, Eigen vectors and quadratic forms.
3.	First order ordinary differential equations and some simple geometrical and physical applications.
4.	Orthogonal trajectories, Simple electrical circuits and Newton's law of cooling.
5.	Methods of solution of linear higher order ordinary differential equations.
6	Concepts of Laplace transforms and their applications for solving ODE.

Course Outcomes: At the end of the course the student will be able to

S.No	Outcome	KL
1.	Solve a given system of linear algebraic equations	K3
2.	Determine Eigen values and Eigen vectors of a system represented by a matrix.	K3
3.	Solve ordinary differential equations of first order and first degree.	K3
4.	Applythe knowledge in simple applications such as Newton's law of cooling, orthogonal trajectories and simple electrical circuits	K3
5.	Solve linear ordinary differential equations of second order and higher order.	K3
6.	Determine Laplace transform, inverse Laplace transform and solve linear ODE	K3

SYLLABUS

UNIT-I (10 Hrs)	**Linear systems of equations:** Rank, Echelon form, Normal form, consistency of system of linear equations, Solution of linear systems by Gauss elimination, Jacobi and Gauss-Seidel methods.
UNIT-II (10 Hrs)	**Eigen values - Eigen vectors and Quadratic forms:** Eigen values, Eigen vectors, Properties, Cayley-Hamilton theorem, Inverse and powers of a matrix using Cayley-Hamilton theorem, Reduction to diagonal form, Quadratic forms, Reduction of a Quadratic form to Canonical form.
UNIT-III (10 Hrs)	**Differential equations of first order and first degree:** Linear, Bernoulli, Exact, Reducible to exact types. Applications: Orthogonal trajectories, Newton's Law of cooling, Simple electrical circuits.(R-L and R-C circuits only)
UNIT-IV (8 Hrs)	**Linear differential equations of higher order:** Linear Non-homogeneous equations of higher order with constant coefficients with source (RHS) term of the type e^{ax}, sin ax, cos ax, polynomials in x, e^{ax} V(x), x V(x). Simultaneous differential equations with constant coefficients, Method of Variation of parameters.

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UNIT-V (12 Hrs)	**Laplace transformation:** Laplace transforms of standard functions, properties,transforms of tf(t), f(t)/t, transforms of derivatives and integrals, transforms of unit step function, Dirac delta function; Inverse Laplace transforms, convolution theorem (without proof). Applications: Solving ordinary differential equations (initial value problems) using Laplace transforms.

Text Books:

1.	B.S.Grewal, Higher Engineering Mathematics, 43rd Edition, Khanna Publishers.
2.	B. V. Ramana,Higher Engineering Mathematics, 2007 Edition, Tata Mc. Graw Hill Education.
3.	N.P.Bali&Manish Goyal, Engineering Mathematics, Lakshmi Publications.

Reference Books:

1.	V. Ravindranath&P. Vijayalakshmi, Mathematical Methods, Himalaya Publishing House.
2.	Erwin Kreyszig, Advanced Engineering Mathematics, 10th Edition, Wiley-India.
3.	Michael Greenberg, Advanced Engineering Mathematics, 9th edition, Pearson.
4.	Dean G. Duffy, Advanced engineering mathematics with MATLAB, CRC Press.
5.	Peter O'Neil, Advanced Engineering Mathematics, Cengage Learning.
6.	Srimanta Pal, Subodh C.Bhunia, Engineering Mathematics, Oxford University Press.
7.	Dass H.K., Rajnish Verma. Er., Higher Engineering Mathematics, S. Chand Co. Pvt. Ltd, New Delhi.

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Course Code	Category	L	T	P	C	I.M	E.M	Exam
B20BS1201	BS	3	--	--	3	30	70	3 Hrs.

MATHEMATICS – II
(FOURIER ANALYSIS AND PARTIAL DIFFERENTIAL EQUATIONS)

(Common to AIDS, CE, CSE, ECE, EEE, IT & ME)

Prerequisites: Calculus of functions of a single variable and Geometry

Course Objectives: Students are expected to learn:

1.	How to expand an aperiodic function in a Fourier series.
2.	How to find Fourier transform for a given function and evaluate some real definite integrals.
3.	Application of partial differentiation for determining maxima/ minima of functions.
4.	Evaluation of real definite integrals.
5.	Formation and solution of linear partial differential equations
6.	Solution of one-dimensional wave equation and one-dimensional heat equation by the method of separation of variables.

Course Outcomes: At the end of the course students will be able to

S. No	Outcome	KL
1.	DetermineFourier series and half range series of functions	K3
2.	Determine Fouriertransforms of non-periodic functions and also use them to evaluate integrals.	K3
3.	Compute partial derivatives, total derivative and Jacobians.	K3
4.	Find maxima/minima of functions of two variables and evaluate some real definite integrals.	K3
5.	Form partial differential equations and solve Lagrange linear equation. Solve linear higher order homogeneous and non-homogeneous PDEs.	K3
6.	Find theoretical solution of one-dimensional wave equation and one-dimensional heat equation	K3

SYLLABUS

UNIT-I (10 Hrs)	**Fourier Series** Introduction, Periodic functions, Fourier series of a periodic function, Dirichlet's conditions, Change of interval. Even and odd functions, Half-range sine and cosine series.
UNIT-II (12 Hrs)	**Fourier Transforms** Fourier integral theorem (without proof), Complex form of Fourier integral, Fourier sine and cosine integrals, Fourier transform, Fourier sine and cosine transforms, Finite Fourier transforms, properties, inverse transforms, Parseval's Identities.
UNIT-III (10 Hrs)	**Partial differentiation:** Introduction, Homogeneous functions, Euler's theorem, Chain rule, Total derivative. Jacobians and their properties. Applications: Taylor series expansion for a function of two variables, Maxima and Minima of functions of two variables with and without constraints, Lagrange's method.Leibnitz's rules for differentiation under integral sign.

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UNIT-IV (10 Hrs)	**First order and higher order partial differential equations:** Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions, solutions of Lagrange linear equation.Solutions of Linear homogeneous and non-homogeneous partial differential equations with constant coefficients –source (RHS) terms of the type e^{ax+by}, sin (ax+by), cos (ax+by), $x^m y^n$.
UNIT-V (10 Hrs)	**Applications of partial differential equations:** Method of separation of variables, One –dimensional wave equation, the D'Alembert's solution, one- dimensional heat equation
Text Books:	
1.	B.S.Grewal, Higher Engineering Mathematics, 43rd Edition, Khanna Publishers.
2.	N.P.Bali& Manish Goyal, A Text book of Engineering Mathematics, Lakshmi Publications.
3.	B. V. Ramana, Higher Engineering Mathematics, 2007 Edition, Tata Mc. Graw Hill Education.
Reference Books:	
1.	Dean G. Duffy, Advanced engineering mathematics with MATLAB, CRC Press.
2.	V.Ravindranath and P. Vijayalakshmi, Mathematical Methods, Himalaya Publishing House.
3.	Erwin Kreyszig, Advanced Engineering Mathematics, 10th Edition, Wiley-India.
4.	David Kincaid, Ward Cheney, Numerical Analysis-Mathematics of Scientific Computing, 3rd Edition, Universities Press.
5.	Srimanta Pal, Subodh C.Bhunia, Engineering Mathematics, Oxford University Press.
6.	Dass H.K., RajnishVerma. Er., Higher Engineering Mathematics, S. Chand Co. Pvt. Ltd, New Delhi.

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Course Code	Category	L	T	P	C	I.M	E.M.	Exam
B20BS1104	BS	3	--	--	3	30	70	3 Hrs.

DISCRETE MATHEMATICS

(For CSBS)

Course Objectives: Students are expected to learn

1.	To check the validity of arguments by using basic connective and valid rules of inference.
2.	To impart knowledge on Boolean algebra and their properties.
3.	To observe various properties of sets and relations.
4.	To know different algebraic structures and their properties.
5.	To understand different counting Techniques.
6.	To identify different graphs, isomorphism of graphs, paths, cycles and circuits.

Course Outcomes: After completion of the course, the student will be able to

S.No	Outcome	K L
1	Translate the arguments using propositions and predicates to verify their validity.	K3
2	Utilize Boolean expressions and their simplifications.	K3
3	Make use of sets & relations in different functioning procedures.	K3
4	Illustrate the properties of Groups, Rings, Fields.	K3
5	Solve different counting problems and recurrence relations.	K3
6	Apply graph theory techniques to solve some problems related to computer science.	K3

SYLLABUS

UNIT-I (10Hrs)	**Logic:** Propositional calculus - propositions and connectives, syntax; Semantics – truthassignments and truth tables, validity and satisfiability, tautology; Adequate set of connectives; Equivalence and normal forms; Compactness and resolution; Formal reducibility - natural deduction system and axiom system; Soundness and completeness.
UNIT-II (08Hrs)	**Boolean algebra:** Introduction of Boolean algebra, truth table, basic logic gate, basic postulates of Boolean algebra, principle of duality, canonical form, Karnaugh map.
UNIT-III (10Hrs)	**Abstract Algebra:** Set, relations and their properties, binary operations, algebraic system, semi group, monoid, groups and their properties, subgroup, simple examples, ring – definition and example, field – definition and example.
UNIT-IV (10Hrs)	**Combinatorics:** Basic counting, balls and bins problems, generating functions, recurrence relations, Methods of solving recurrence relations, principle of mathematical induction, pigeonhole-principle, principle of inclusion-exclusion and related problems.
UNIT-V (12 Hrs.)	**Graph Theory:** Graphs and digraphs, complement, isomorphism, connectedness and reachability, adjacency matrix, Eulerian paths and circuits in graphs and digraphs. Hamiltonian paths and circuits in graphs and tournaments, trees and their properties; Planar graphs, Euler's formula, dual of a planer graph, independence number and clique number, chromatic number, statement of Four-color theorem.

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Text Books:	
1.	Trembly J.P. & Manohar, Discrete Mathematical Structures with applications to computer science, 1/e, McGraw Hill Education, 2017.
2.	I. N. Herstein, Topics in Algebra, 2/e, John Wiley and Sons, 1975.
3.	M. Morris Mano,Digital Logic & Computer Design, 1/e, Pearson, 2004.
4.	J. A. Bondy and U. S. R. Murty, Graph Theory with Applications, 5/e, Macmillan Press, London, 1982.

Reference Books:	
1.	Gilbert Strang, Introduction to linear algebra, 4/e, Wellesley-Cambridge Press, 2009.
2.	R. A. Brualdi, Introductory Combinatorics, 1/e, North-Holland, New York, 1977.
3.	N. Deo,Graph Theory with Applications to Engineering and Computer Science, 1/e, Prentice Hall, Englewood Cliffs, 2016.
4.	E. Mendelsohn, Van-Nostrand,Introduction to Mathematical Logic,4/e, Chapman & Hall, London, 1957.
5.	C. L. Liu, Elements of Discrete Mathematics, 2/e, McGraw Hill, New Delhi, 2011.
6.	L. Zhongwan, Mathematical Logic for Computer Science, World Scientific, Singapore, 1989.

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Code	Category	L	T	P	C	I.M	E.M	Exam
B20BS1105	BS	3	--	--	3	30	70	3 Hrs.

INTRODUCTORY TOPICS IN STATISTICS, PROBABILITY AND CALCULUS

(For CSBS)

Course Objectives: Students are expected to

1.	Familiarize themselves with the foundations of statistical methods and their representation.
2	Get an idea of basic concepts of probability and their applications.
3	Know the concepts of Mathematical expectation and Moment generating function.
4	Learn various statistical measures of a few discrete distributions
5	Learn various statistical measures of a few continuous distributions
6	Gain knowledge of basic concepts of calculus as these concepts lay a strong foundation in Engineering applications.

Course Outcomes: After completion of the course, the student will be able to

S.No	Outcome	K L
1	Understand the concepts of data science and their applications.	K3
2	Make use of the concepts of probability and their applications.	K3
3	Understand the concepts of Expectations and Moment generating function. Apply discrete probability distributions.	K3
4	Predict the discrete distribution suitable for the given data from its moments.	K3
5	Predict the continuous distribution suitable for the given data from its moments	K3
6	Understand the concepts of calculus and application of double integral.	K3

SYLLABUS

UNIT-I (12 Hrs)	**Introduction to Statistics:** Definition of Statistics. Basic objectives. Applications in various branches of science with examples. Collection of Data: Internal and external data, Primary and secondary Data. Population and sample, Representative sample. Descriptive Statistics: Classification and tabulation of univariate data, graphical representation, Frequency curves. Central tendency (Mean, Median and Mode) and dispersion (S.D, M.D, Q.D and Range). Bivariate data. Summarization, marginal and conditional frequency distribution.
UNIT-II (10Hrs)	**Probability**: Concept of experiments, sample space, event. Classical definition of Probability, axiomatic approach. Addition and Multiplication laws of Probability. Conditional Probability, Baye's Theorem.
UNIT-III (12 Hrs)	**Expected values and moments:** Review of basic concepts of Random Variable **(no questions may be set on review).** Mathematical expectation and its properties, Moments (including variance) and their properties, interpretation, Moment generating function. **Discrete Probability Distributions:** Binomial, Poisson and Geometric distributions - Definition, Mean, Variance, moments, m.g.f., Characteristic function and applications.

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UNIT-IV (12 Hrs)	**Continuous Probability Distributions:** Uniform Distribution-Mean, variance and moments. Normal Distribution- Mean, Variance, m.g.f., Characteristic function, Applications of Normal Distribution. Exponential Distribution- Mean, Variance and Memory less property of Exponential distribution. Chi-square, Student - t and F Distributions-Definition, Characteristics like mean, variance and applications (**without proofs**).
UNIT-V (12Hrs)	Multi variable calculus– Functions of two variables, Partial differentiation, Homogeneous functions, Total derivative, Jacobians, Maxima and Minima of functions two variables. Basic Concepts of Double integrals, change of variables, change of order of integration and applications of double integral to find Areasof plane regions.
Text Books:	
1.	Fundamentals of Mathematical Statistics by S. C. Gupta and V. K. Kapoor, Sultan Chand & Sons Publishers.
2.	A. Goon, M. Gupta and B. Dasgupta, Fundamentals of Statistics, vol. I & II, 1/e, World Press,2013.
3.	B. S. Grewal, Higher Engineering Mathematics, 44/e, Khanna Publication, Delhi,1965.
4	Introduction of Probability Models, S.M. Ross, 10/e, Academic Press, N.Y,2010.
Reference Books:	
1.	S.M. Ross, A first course in Probability,8/e, Prentice Hall, 2010.
2.	I.R. Miller, J.E. Freund and R. Johnson, Probability and Statistics for Engineers, 9/e, PHI, 2017.
3.	A.M. Mood, F.A. Graybill and D.C. Boes, Introduction to the Theory of Statistics, 3/e, McGraw Hill Education, 1973.
4.	Peter V. O'Neil, Advanced Engineering Mathematics, 7/e, Thomson Learning, 2011
5.	M. D. Greenberg, Advanced Engineering Mathematics, 2/e, Pearson Education, 2002.
6.	P. N. Wartikar and J. N. Wartikar, Applied Mathematics, Vol. I & II, Vidyarthi Prakashan.

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B20BS1209	BS	--	--	3	1.5	40	60	3 Hrs.

STATISTICAL METHODS LAB

(For CSBS)

Course Objectives: The student who successfully completes this course will have

1.	The knowledge to use R for statistical programming, computation, modelling and graphics.
2.	The skill to write functions and use R in an efficient way.
3.	The ability to fit some basic types of statistical models using R.
4.	The idea to expand the knowledge of R on their own.

Course Outcomes: After completion of the course, the student will be able to

		KL
1.	Write the programs in R to solve the statistical problems.	K3
2.	Apply various built in functions in R to solve the computational and modelling problems.	K3
3.	Interpret the statistical data by various functions of graphical representation	K4
4.	Understand- reading, writing, working and manipulating the data in various data frames.	K3

LIST OF PROGRAMS

R statistical programming language:

1	Introduction to R
2	Functions
3	Control flow and Loops
4	Working with Vectors and Matrices
5	Reading in Data
6	Writing Data
7	Working with Data
8	Manipulating Data
9	Simulation
10	Linear model
11	Data Frame
12	Graphics in R

Reference Books:

1.	Introduction to Time Series Analysis and Forecasting, Douglas C. Montgomery, Cheryl L. Jennings, Murat Kulahci, Wiley Publications, 2011A.
2.	Fundamentals of Statistics, Goon, M. Gupta and B. Dasgupta, vol. I & II, 1/e, World Press,2013.

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Code	Category	L	T	P	C	I.M	E.M	Exam
B20BS1205	BS	3	1	--	4	30	70	3 Hrs.

LINEAR ALGEBRA

(For CSBS)

Course Objectives: Students are expected to learn

1	Concepts of linear algebra and methods of solution of linear simultaneous algebraicequations.
2	LU Decomposition method and Solving Systems of Linear Equations.
3	Dimension, Basis, Orthogonality and Projectionsin Vector spaces
4	Gram-Schmidt orthogonalization and QR decomposition Methods
5	Eigen values, Eigen vectors and Linear Transformations
6	Singular value decomposition and Principal component analysis

Course Outcomes: After completion of the course, the student will be able to

S.No	Outcome	Knowledge Level
1	Apply knowledge of basics of Matrices, Determinants and to test for consistency and solve systems of equation	K3
2	Determine Rank of Matrix and apply LU Decomposition Method	K3
3	Describe Vector Space, Orthogonality and Projection.	K3
4	Apply Gram-Schmidt orthogonalization and QR decomposition methods	K3
5	Calculate Eigen values and Eigen Vectors and Linear Transformations	K3
6	Describe Singular value decomposition and Principal component analysis with certain applications	K3

SYLLABUS

UNIT-I (10 Hrs)	Introduction to Matrices, Determinants, Solution of Linear Equations by Triangle method, Cramer's rule and Gaussian elimination; Inverse of a Matrix by Gauss – Jorda n method.
UNIT-II (12Hrs)	Vectors and linear combinations; Rank of a matrix by Gaussian elimination: Solving Systems of Linear Equations using LU Decomposition andGauss Seidel methods
UNIT-III (12Hrs)	Vector space; Dimension; Basis; Orthogonality; Projections; Gram-Schmidt Orthogonalization and QR decomposition.
UNIT-IV (12Hrs)	Eigen Values and Eigen Vectors; Linear transformations: vector space of L.T., properties of Linear operator, Rank and Nullity of L.T.; Hermitian and unitary matrices.
UNIT-V (10Hrs)	Singular value decomposition and Principal component analysis; Introduction to their applications in Image Processing and Machine Learning.

Text Books:

1.	Advanced Engineering Mathematics, Erwin Kreyszig,John Wiley & Sons, 10th Edition
2.	Introduction to linear algebra, (Fifth Edition), Gilbert Strang, Wellesley-Cambridge Press.

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3.	Higher Engineering Mathematics, B. S. Grewal, Khanna Publishers.
Reference Books:	
1.	Advanced Engineering Mathematics, (Second Edition), Michael. D. Greenberg, Pearson.
2	Advanced Engineering Mathematics, (Seventh Edition), Peter V. O'Neil, Cengage Learning.
3	Linear Algebra, M. L. Kanna, Jai Prakash nath& Co, Meerut
4.	Applied Mathematics (Vol. I & II), P. N. Wartikar& J. N. Wartikar, Pune Vidyarthi GrihaPrakashan.
5.	Digital Image Processing, R C Gonzalez and R E Woods, Pearson.
6.	Linear Algebraand Optimizationfor MachineLearning, Charu C. Aggarwal, Springer Publication

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Code	Category	L	T	P	C	I.M	E.M	Exam
B20BS1206	BS	3	--	--	3	30	70	3 Hrs.

STATISTICAL METHODS
(For CSBS)

Course Objectives: Students are expected to

1	Get familiarized to different Correlation and linear regression methods.
2	Learn various sampling techniques and to find the sampling distribution to the given sample data.
3	Know how to fit best curve using method of least squares to the given data by various curve fitting models.
4	Learn the concept of estimation and get familiar with the use of maximum likelihood estimation method
5	Know how to design and conduct experiments by ANOVA and forecast the data by various models in time series.
6	Learn how to test the hypothesis for non parametric data.

Course Outcomes: After completion of the course, the student will be able to

S.No	Outcome	KL
1	Apply different Correlation and linear regression methods.	K3
2	Illustrate sampling techniques and generate a sampling distribution to the given sample data.	K3
3	Understand the concept of Method of least squares and apply it to fit various types of curves.	K3
4	Make use of the concepts of estimation and predict the maximum likelihood estimate from the given model.	K3
5	Apply ANOVA techniques and forecasting methods to the given time series data.	K3
6	Make use of testing of hypothesis and its applications to the non-parametric data.	K3

SYLLABUS

UNIT-I (10 Hrs)	**Linear Statistical Models:** Scatter diagram. Correlation, Types of correlation, correlation coefficient, properties of correlation coefficient (without proofs), Rank correlation, Linear regression, Multiple regression & multiple correlation.
UNIT-II (10 Hrs)	**Sampling Techniques:** Types of sampling- Random sampling. Sampling from finite and infinite populations. Parameter, statistic, sampling distribution and standard error (sampling with replacement and sampling without replacement), Sampling distribution of sample mean (σ known) and variance. Sampling distribution of differences and sums.
UNIT-III (12 Hrs)	**Curve fitting by Least squares method-**Fitting of straight line, second degree polynomial, power and exponential curves. **Estimation:** Point estimation, criteria for good estimates (un-biasedness, consistency). Interval estimation, Methods of estimation - maximum likelihood estimation. Sufficient Statistic: Concept & examples, complete sufficiency, their application in

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	estimation.
UNIT-IV (12 Hrs)	**ANOVA:** Analysis of Variance (one-way classification), Analysis of Variance (two-way classification). **Basics of Time Series Analysis & Forecasting:** Stationary, ARIMA Models: Identification, Estimation and Forecasting.
UNIT-V (12 Hrs)	**Test of hypothesis:** Concept & formulation, Type I and Type II errors, Neyman Pearson lemma (without proof), Procedures of testing of hypothesis. **Non-parametric Inference:** Comparison with parametric inference, Use of order statistics. Sign test, Wilcoxon signed rank test, Mann-Whitney test, Run test, Kolmogorov-Smirnov test, Spearman's and Kendall's test, Tolerance region.

Text Books:

1.	Probability & Statistics for Engineers & Scientists, Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, Keying Ye, 9th Edition, Prentice Hall
2.	Probability and Statistics for Engineers (Fourth Edition), I.R. Miller, J.E. Freund and R. Johnson, Prentice Hall India Learning Private Limited.
3.	Fundamentals of Mathematical Statistics by S. C. Gupta and V. K. Kapoor, Sultan Chand & Sons Publishers.

Reference Books:

1.	Introduction to Time Series Analysis and Forecasting, Douglas C. Montgomery, Cheryl L. Jennings, Murat Kulahci, Wiley Publications, 2011A.
2.	Fundamentals of Statistics, Goon, M. Gupta and B. Dasgupta, vol. I & II, 1/e, World Press,2013.
3.	Advanced Engineering Mathematics, Erwin Kreyszig, John Wiley & Sons, 10th Edition
4.	Introduction of Probability Models, S.M. Ross, 10/e, Academic Press, N.Y.,2010.
5.	Higher engineering mathematics, B V Ramana, MC Graw Hill Education publications.

Data Sources:

1.	www.rbi.org.in

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Course Code	Category	L	T	P	C	I.M	E.M	Exam
B20BS1204	BS	3	--	--	3	30	70	3 Hrs.

MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

(For CSE)

Course Objectives: Students are expected to

1.	Understand propositional and predicate calculus.
2.	Know about concepts of counting techniques.
3.	Identify various types of relations and discuss their properties.
4.	Understand the concepts in Lattices and Boolean Algebra.
5.	Know about generating functions and methods of solving recurrence relations
6.	Have an idea on the concepts of Graph theory & Tree structures

Course Outcomes: At the end of the course students will be able to

S.No	Outcome	KL
1.	Write and verify the arguments for their validity using propositional and predicate logic.	K3
2.	Utilize different counting methods in their fields of study.	K3
3.	Make use of various types of relations and their properties.	K3
4.	Identify different Lattices and Boolean expressions.	K3
5.	Formulate and solve the recurrence relations.	K3
6.	Utilize the concepts in graphs and trees.	K3

SYLLABUS

UNIT-I (12 Hrs)	**Mathematical Logic:** Propositional Calculus: Statements and Notations, Connectives, Well-formed Formulae, Truth Tables, Tautologies, Equivalence of Formulas, Duality Law, Normal Forms, Theory of Inference for Statement Calculus, Consistency of Premises. Predicate Calculus: Predicative Logic, Statement Functions, Variables and Quantifiers, Free and Bound Variables, Inference Theory for Predicate Calculus.
UNIT-II (08 Hrs)	**Combinatorics:** Basics of Counting, Permutations, Permutations with Repetitions, Circular Permutations, Restricted Permutations, Combinations, Restricted Combinations, Generating Functions of Permutations and Combinations, Binomial and Multinomial Theorems, Binomial and Multinomial Coefficients, Principle of Inclusion–Exclusion.
UNIT-III (14 Hrs)	**Relations, Lattices & Boolean Algebra:** Relations : Definition of Relation, Properties of Binary Relations, Relation matrix and diagraph, Operations on Relations, Transitive Closure, Warshall's algorithm, Equivalence and Compatibility relations, Partial Ordering Relations, Hasse Diagrams. Lattices & Boolean Algebra: Lattices and their properties, different types of lattices, Boolean algebra- Boolean expressions, truth tables and karnaugh maps

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UNIT-IV (10 Hrs)	**Recurrence Relations:** Generating Functions, Partial Fractions, Calculating Coefficient of Generating Functions, Recurrence Relations, Formulation as Recurrence Relations, Solving Recurrence Relations by Substitution and Generating Functions, Method of Characteristic Roots, Solving Inhomogeneous Recurrence Relations
UNIT-V (12 Hrs)	**Graph Theory:** Basic Concepts of Graphs, Sub graphs, Isomorphism of Graphs, Paths and Circuits, Eulerian and Hamiltonian Graphs, Multigraphs, Bipartite graphs, Planar Graphs, Euler's Formula. **Trees**: Definition of Tree, properties of Trees, Different tree structures, Binary trees, Spanning trees, Minimal Spanning Trees, Kruskal's and Prim's Algorithms.

Text Books:

1.	Discrete Mathematical Structures with Applications to Computer Science, J. P. Tremblay and P. Manohar, Tata McGraw Hill.
2.	Discrete Mathematics for Computer Scientists and Mathematicians, J. L. Mott, A. Kandel, T.P. Baker, 2nd Edition, Prentice Hall of India

Reference Books:

1.	Elements of Discrete Mathematics-A Computer Oriented Approach, C. L. Liu and D.P. Mahopatra, 3rd Edition, Tata McGraw Hill.
2.	Discrete Mathematics and its Applications with Combinatorics and Graph Theory, K. H. Rosen. 7th Edition, Tata McGraw Hill.
3.	Discrete Mathematical Structures, Bernand Kolman, Robert C. Busby, Sharon Cutler Ross, PHI.
4.	Discrete Mathematics, S. K. Chakraborthy and B.K. Sarkar, Oxford, 2011.

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Course Code	Category	L	T	P	C	I.M	E.M	Exam
B20HS1101	HS	3	–	–	3	30	70	3Hrs

ENGLISH

(Common to AIDS,CE,CSE,ECE,EEE,IT&ME)

Introduction:

The course is designed to train students in receptive as well as productive skills by incorporating a comprehensive, coherent and integrated approach that improves the learners' ability to effectively use English language in academic/ workplace contexts. The shift is from *learning about the language* to *using the language*. On successful completion of the compulsory English language course/s in B.Tech., learners would be confident of appearing for international language qualification/proficiency tests such as GRE, GMAT, IELTS, TOEFL and BEC besides being able to handle the writing tasks and verbal ability components ofcampusplacementtests.Activitybasedteaching-learningmethodswouldbeadoptedto ensure that learners would engage in actual use of language both in the classroom and laboratorysessions.

Course Objectives:

1.	To facilitate effective listening skills for better comprehension of varied accents spoken at national and global levels.
2.	To focus on appropriate reading strategies for better comprehension of multiple texts and authentic materials.
3.	To improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations.
4.	To impart effective strategies for good writing and demonstrate the same in both summarizing and analyzing; writing well-organized essays, letters, e-mails, CV's and reports.
5.	To provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing.

Course Outcomes: At the end of the Course the students will be able to

S.No	OutCome	KL
1.	Identify the context, topic and pieces of specific information by understanding andresponding to the social or transactional dialogues spoken by native speakers of English.	K3
2.	Apply suitable strategies for skimming and scanning to get the main idea of a textand locate specific information.	K3
3.	Build confidence and adapt themselves to the social and public discourses,discussions and presentations.	K3
4.	Apply the principles of writing to paragraphs, arguments, essaysand formal/informal communication.	K3
5.	Construct sentences using proper grammatical structures and correct word forms.	K4

SYLLABUS

UNIT-I (8 Hrs)	**Lesson: A Drawer full of happiness** from *Infotech English*, Maruthi Publications. **Listening:** Listening to short audio texts and identifying the topic, context and specific pieces of information to answer a series of questions both in speaking and writing.

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	Speaking: Self- introduction and introducing others. Asking and answering general questions on topics such as home, family, work, studies and interests. **Reading:** Skimming text to get the main idea. Scanning to look for specific pieces of information. **Reading for Writing:** Paragraph Writing (Hints Development), general essays using suitable cohesive devices; linkers, sign posts and transition signals; mechanics of writing, punctuation. **Vocabulary:**Technical vocabulary from across technical branches (20) GRE Vocabulary (20), antonyms and synonyms, word applications, verbal reasoning and sequencing of words. **Grammar:** Content words and function words; parts of Speech, tenses, word order in sentences, sentence structures.
UNIT-II (9 Hrs)	**Lesson-: Nehru's letter to his daughter, Indira on her birthday**from*Infotech English*, Maruthi Publications. **Listening:** Answering a series of questions about main idea and supporting ideas after listening to audio texts both in speaking and writing. **Speaking:** Discussion in pairs/ small groups on specific topics followed by short structured talks, functional English: greetings and leave takings. **Reading:** Identifying sequence of ideas; recognizing verbal techniques that help to link the ideas in a paragraph together. **Reading for Writing:** Identifying the main ideas, rephrasing and summarizing them (précis writing); avoiding redundancies and repetitions. **Vocabulary:** Technical vocabulary from across technical branches (20 words). GRE Vocabulary Analogies (20 words), antonyms and synonyms, word applications. **Grammar:** Articles, prepositions, conjunctions, use of synonyms and antonyms.
UNIT-III (9 Hrs)	**Lesson: Stephen Hawking-Positivity'Benchmark'**from*Infotech English*,Maruthi Publications. **Listening:**Listening for global comprehension and summarizing what is listened to both in speaking andwriting. **Speaking:** Discussing specific topics in pairs or small groups and reporting what is discussed. Functional English: complaining andapologizing. **Reading:** Reading a text in detail by making basic inferences -recognizing and interpreting specific context clues; strategies to use text clues for comprehension, criticalreading. **Reading for Writing:** Letter writing- types, format and principles of letter writing, E-mail etiquette, writing a Resume/CV and covering letter. **Vocabulary:** Technical vocabulary from across technical branches (20 words GRE. Vocabulary 20 words), Idioms & Phrasal verbs, Homonyms, word applications, sequencing of words.

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	Grammar: Sentence Structures, Transformation of sentences (Active and passive Voice, Degrees of comparison, Simple, Compound and Complex).
UNIT-IV (8 Hrs)	**Lesson: Liking a Tree, Unbowed: Wangari Maathai biographyfrom** *Infotech English*, MaruthiPublications. **Listening:** Making predictions while listening to conversations/ transactional dialogues without video (only audio), listening to audio-visual texts. **Speaking:** Role plays for practice of conversational English in academic contexts (formal and informal) - asking for and giving information/directions. Functional English: asking for permissions, requesting,Inviting. **Reading:** Studying the use of graphic elements in texts to convey information, reveal trends/patterns/relationships, communicative process or display complicated data. **Reading for Writing:**Information transfer; describe, compare, contrast, identify significance/trends based on information provided in figures/charts/graphs/tables. Pamphlet writing, writing for media, writing SOP's. **Vocabulary:**Technical vocabulary from across technical branches (20 words GRE Vocabulary (20 words), antonyms and synonyms, word applications, cloze encounters, foreign phrases. **Grammar:**Quantifying expressions - adjectives and adverbs: comparing and contrasting, question Tags, direct and indirect speech, reporting for academic purposes.
UNIT-V (8 Hrs)	**Lesson: Stay Hungry–Stay Foolishfrom** *Infotech English*, Maruthi Publications. **Listening:** Identifying key terms, understanding concepts and interpreting the concepts both in speaking and writing. **Speaking:** Formal oral presentations on topics from academic contexts– with/without the use of PPT slides. Functional English: Suggesting/Opiniongiving. **Reading:** Reading for comprehension, RAP Strategy - intensive reading and extensive reading techniques. **Reading for Writing:** Report writing, writing academic proposals- writing research articles: format and style. **Vocabulary:** Technical vocabulary from across technical branches (20 words GRE 'Vocabulary (20 words, antonyms and synonyms, word applications, coherence, matching emotions. **Grammar:** Editing short texts — identifying and correcting common errors in grammar and usage (articles, prepositions, tenses, subject-verb agreement, parallel structures, phrases and clauses).
Text Books:	
1	*Infotech English*, Maruthi Publications.

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Reference Books:	
1.	Bailey, Stephen. Academic writing: A Handbook for International Students. Routledge,2014.
2.	Chase. Becky Tarver. Pathways: Listening, Speaking and Critical Thinking. Heinley ELT;2nd Edition, 2018.
3.	Skilful Level 2 Reading & Writing Student's Book Pack (B1). Macmillan Educational
4.	Hewing, Martin. Cambridge Academic English (B2). CUP, 2012.
E-Resources:	
Grammar/Listening/Writing	
	1-language.com
	http://www.5minuteenglish.com/
	https://www.englishpractice.com/
Grammar/Vocabulary	
	English Language Learning Online
	http://www.bbc.co.uk/learningenglish/
	http://www.better-english.com/
	http://www.nonstopenglish.com/
	https://www.vocabulary.com/
	BBC Vocabulary Games
	Free Rice Vocabulary Game
Reading	
	https://www.usingenglish.com/comprehension/
	https://www.englishclub.com/reading/short-stories.htm
	https://www.english-online.at/
Listening	
	https://learningenglish.voanews.com/z/3613
	http://www.englishmedialab.com/listening.html
Speaking	
	https://www.talkenglish.com/
	BBC Learning English – Pronunciation tips
	Merriam-Webster – Perfect pronunciation Exercises
All Skills	
	https://www.englishclub.com/
	http://www.world-english.org/
	http://learnenglish.britishcouncil.org/
	Online Dictionaries
	Cambridge dictionary online
	MacMillan dictionary
	Oxford learner's dictionaries

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Course Code	Category	L	T	P	C	I.M	E.M	Exam
B20HS1202	HS	–	–	3	1.5	15	35	3Hrs

COMMUNICATION SKILLS LAB

(Common to AIDS ,CE,CSE,ECE,EEE,IT & ME)

Course Objectives:

1.	To expose to a variety of self-instructional, learner-friendly modes of languagelearning.
2.	To familiarize the students with CALL (Computer Assisted Language Learning). Thus, providing them with the required facility to face computer-based competitive exams like GRE,TOEFL, GMAT etc.
3.	To equip the students with necessary professional communication.
4.	To build confidence in LSRW Skills.
5.	To adapt the students by adopting the techniques of effective communication skills.

Course Outcomes: At the end of the course students will be able to

S.No	Out Come	KL
1.	Apply their linguistic competence in all LSRW skills to professional and personal settings.	K3
2.	Apply communication skills learnt through various language learning activities to their advancement in academics and competitive examinations.	K3
3.	Draft job application letters, E-Mail messages and other writing discourses.	K3
4.	Adopt professional etiquette consistent with formal settings.	K3
5.	Improve fluency and clarity in both spoken and written English.	K3

SYLLABUS

UNIT-I	A list of communicative expressions (Requests, Permissions, Asking/ giving directions, Thanking and Responding to Thanks, Clarifying, Inviting, Congratulating, Advising, Agreeing and disagreeing etc.,) Common Errors
UNIT-II	Pronunciation Letters and Sounds The Sounds of English Stress and Intonation Phonetic Transcription
UNIT-III	Group Discussions
UNIT-IV	Presentation Skills
UNIT-V	Interview Skills Resume/ Curriculum Vitae Covering Letter FAQ's Telephonic Interviews/ Etiquette Mock Interviews

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Text Books:	
1.	Interact – English Lab Manual for Undergraduate Students – Orient BlackSwan
Reference Books:	
1.	Exercises in Spoken English Part 1,2,3,4, OUP and CIEFI.
2.	English Pronunciation in use- Mark Hancock, CUP.
3.	English Pronunciation in use- Mark Hewings, CUP.
4.	English Pronunciation Dictionary- Daniel Jones, CUP.
5.	English Phonetics for Indian Students- P. BalaSubramanian, Mac MillanPublications
6.	Technical Communication- Meenakshi Raman, Sangeeta Sharma, OUP.
7.	Technical Communication- Gajendra Singh Chauhan, SmitaKashiramka, cengage Publications

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Code	Category	L	T	P	C	I.M	E.M	Exam
B20HS1102	HS	--	--	3	1.5	15	35	3 Hrs.

BUSINESS COMMUNICATION & VALUE SCIENCE - I LAB

(For CSBS)

Course Objectives:

1.	To understand what life skills are and their importance in leading a happy and well-adjusted life
2.	To motivate students to look within and create a better version of self
3.	To introduce them to key concepts of values, life skills and business communication

Course Outcomes: After completion of the course, the student will be able to

S. No	Outcome	KL
1	Recognize the need for life skills and values	K2
2	Recognize own strengths and opportunities	K2
3	Apply the life skills to different situations	K3
4	Understand the basic tenets of communication	K2
5	Apply the basic communication practices in different types of communication	K3

SYLLABUS

Exercise-1	**Overview of LOL** (include activity on introducing self) **Class activity** – presentation on favorite cricket captain in IPL and the skills and values they demonstrate **Self-work with immersion** – interview a maid, watchman, sweeper, cab driver, beggar and narrate what you think are the values that drive them
Exercise-2	**Activity**: Write a newspaper report on an IPL match **Activity:** Record a conversation between a celebrity and an interviewer **Quiz Time, Self-awareness** – identity, body awareness, stress management
Exercise-3	**Essential Grammar – I:** Refresher on Parts of Speech – Listen to an audio clip and note down the different parts of speech followed by discussion Tenses: Applications of tenses in Functional Grammar – Take a quiz and then discuss **Sentence formation** (general & Technical), Common errors, Voices. Show sequence from film where a character uses wrong sentence structure (e.g. Zindagi Na MilegiDobara where the characters use 'the' before every word)
Exercise-4	**Communication Skills:** Overview of Communication Skills, Barriers of communication, Effective communication **Types of communication-** verbal and non – verbal – Role-play based learning **Importance of Questioning, Listening Skills:** Law of nature- Importance of listening skills, Difference between listening and hearing, Types of listening.
Exercise-5	**Expressing self**, connecting with emotions, visualizing and experiencing purpose **Activity:** Skit based on communication skills **Evaluation on Listening skills** – listen to recording and answer questions based on them
Exercise-6	**Email writing**: Formal and informal emails, activity **Verbal communication**: Pronunciation, clarity of speech

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Exercies-7	**Vocabulary Enrichment:** Exposure to words from General Service List (GSL) by West. Academic word list (AWL) technical specific terms related to the field of technology. phrases, idioms, significant abbreviations formal business vocabulary – Read Economic Times, Reader's Digest, National Geographic and take part in a GD, using the words you learnt/liked from the articles. Group discussion using words learnt. **Practice:** Toastmaster style Table Topics speech with evaluation
Exercise-8	**Written Communication**: Summary writing, story writing **Build your CV** – start writing your comprehensive CV including every achievement in your life, no format, no page limit **Project:** Create a podcast on a topic that will interest college students **Life skill:** Stress management, working with rhythm and balance, colours, and teamwork
Exercise-9	**Understanding Life Skills:** Movie based learning – **Pursuit of Happiness.** What are the skills and values you can identify, what can you relate to? **Introduction to life skills:** What are the critical life skills
Exercise-10	**Life skill:** Community service – work with an NGO and make a presentation **Life skill: Join a trek** – Values to be learned: Leadership, teamwork, dealing with ambiguity, managing stress, motivating people, creativity, result orientation.

Text Books:	
1.	There are no prescribed texts for Semester 1

Reference Books:	
1	English vocabulary in use – Alan Mc'carthy and O'dell
2	APAART: Speak Well 1 (English language and communication)
3	APAART: Speak Well 2 (Soft Skills)
4	Business Communication – Dr. Saroj Hiremath

Web References:	
1	Train your mind to perform under pressure- Simon sinek https://curiosity.com/videos/simon-sinek-on-training-your-mind-to-perform- under pressure-capture-your-flag/
2	Brilliant way one CEO rallied his team in the middle of layoffs https://www.inc.com/video/simon-sinek-explains-why-you-should-put-people-beforenumbers.html
3	Will Smith's Top Ten rules for success https://www.youtube.com/watch?v=bBsT9omTeh0

Online Resources:	
1	https://www.coursera.org/learn/learning-how-to-learn
2	https://www.coursera.org/specializations/effective-business-communication

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Code	Category	L	T	P	C	I.M	E.M	Exam
B20HS1203	HS	--	--	3	1.5	15	35	3 Hrs.

BUSINESS COMMUNICATION & VALUE SCIENCE - II

(For CSBS)

Course Objectives:

1. To develop effective writing, reading, presentation and group discussion skills.
2. To help students identify personality traits and evolve as a better team player.
3. To introduce them to key concepts of: Morality, Behavior and beliefs, Diversity & Inclusion

Course Outcomes: After completion of the course, the student will be able to

S. No	Outcome	KL
1	Understand and use tools of structured written communication	K3
2	Understand the basics of presentation and apply efficacious techniques to make presentations in the electronic/social media to share concepts and ideas required for any organization.	K3
3	Design various activities of communication resulting in building a team-spirit and creating social awareness.	K3
4	Understand the basic concepts of Morality and Diversity	K2
5	Create communication material to share concepts and ideas	K4

SYLLABUS

Exercise-1	Icebreaker. 1) Participate in 'Join Hands Movement'. Individual identification of social issues.2) Each Individual chooses one particular social issue which they would like to address. 3) Class to be divided in teams for the entire semester. All activities to be done in teams and the grades, credit points will be captured in the leader board in the class room.4) Theory to introduce the participant Slam book to be used for capturing individual learning points and observations. Research on the social cause each group will work for. Class discussion- Good and Bad Writing. Common errors, punctuation rules, use of words. **Group Practical** – As a group, they will work on the social issue identified by them. Research, read and generate a report based on the findings.(Apply the learning and recap from the session) **Practical:** Plan and design an E Magazine. Apply and assimilate the knowledge gathered from Sem-1 till date. Share objective & guideline. All members to contribute an article to the magazine, trainer to evaluate the content.
Exercise-2	Lucid Writing: Encourage the students to go through the links given about Catherine Morris and Joanie Memahon's writing techniques. Create the magazine. SATORI – Participants share the personal take away acquired from GD, writing and reading skills activities captured in their handbook. Share the most important learning points from the activities done so far and how that learning has brought a change. Launching an E Magazine.
Exercise-3	Each group will form an NGO. Create Vision, Mission, Value statement, tagline and Design a logo.

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	Introduction to basic presentation skills& ORAI app Groups to present their NGOs. Apply the learning gathered from session 2. Presentation to be recorded by the groups. feedback from the audience/ Professor Group to come back and share their findings from the recording. Post work- individual write up to be written and evaluated for the E- magazine Prepare and publish the Second episode of the E Magazine.
Exercise-4	Speed Reading session: Introduction to skimming and scanning; practice the same. SATORI – Join the dots- Participants to connect their learning gathered from AIP Unit-2 with their existing curriculum **Quiz Time**
Exercise-5	Ad campaign- Brain storming session- Students to discuss and explore the means of articulating and amplifying the social issue their NGOs are working for. Design a skit- a) write the script articulating the message of their respective NGOs. Read out the script. (Skit time-5 minutes). Feedback of Theory. Promote the play through a social media and gather your audience. Enact the play. Capture the numbers of likes and reviews. Theory to assign grades to individual team. (1)Theory to find out from the participants their views, observations and experiences of working in a team (2) Intro of Dr. Meredith Belbin and his research on team work and how individuals contribute. (3) Belbin's 8 Team Roles and Lindgren's Big 5 personality traits. (4) Belbin's 8 team player styles
Exercise-6	(1)Team Falcon Practical to identify individual personality traits with Belbin's 8 team player styles (2) Similar personality types to form groups (3) Groups present their traits. Prepare and publish the third episode of the E Magazine. SATORI – (join the dots with participants personal life) Participants share the personal take away acquired from working in teams, GD, learning about presentations, presenting their NGOs
Exercise-7	Ten minutes of your time – a short film on diversity. Play the video (link to be attached in the FG) Discuss key take away of the film. Theory to connect the key take away of the film to the concept of empathy. Touch the target (Blind man) - Debriefing of the Practical.
Exercise-8	Film: "The fish and I" by BabakHabibifar" (1.37mins) Groups to create a story – 10 minutes of a person's life affected by the social issue groups are working on. Narrate the story in first person. Feedbacks to be shared by the other groups.
Exercise-9	Research on a book, incident or film based on the topic of your respective NGO Write a review in a blog on the topics they are covering in their research. Theory will give grades to each team. Teams to video record interviews of people from diverse groups (Ask 5 questions). Share the recordings in FB

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B20MC1201	MC	2	–	–	0	–	–	–

ENVIRONMENTAL SCIENCE

(Common to AIDS,CE,CSBS,EEE & ME)

Course Objectives: The objectives of the course are to impart:

1.	Overall understanding of the natural resources.
2.	Basic understanding of the ecosystem and its diversity.
3.	Acquaintance on various environmental challenges induced due to unplanned anthropogenic activities.
4.	An understanding of the environmental impact of developmental activities.
5.	Awareness on the social issues, environmental legislation and global treaties.

Course outcomes : After completion of the course, students will be able to		**K L**
1	Bring awareness among the students about the nature and natural ecosystems	K2
2	Sustainable utilization of natural resources like water, land, energy and air	K4
3	Resource pollution and over exploitation of land, water, air and catastrophic (events) impacts of climate change, global warming, ozone layer depletion, marine, radioactive pollution etc to inculcate the students about environmental awareness and safe transfer of our mother earth and its natural resources to the next generation	K5
4	Constitutional provisions for the protection of natural resources	K2
5	Green technologies and its applications	K3

SYLLABUS

UNIT-I (8 Hrs)	**Multidisciplinary nature of Environmental Studies:** Definition, Scope and Importance – Sustainability: Stockholm and Rio Summit–Global Environmental Challenges: Global warming and climate change, acid rains, ozone layer depletion, population growth and explosion, effects;. Role of information technology in environment and human health. **Ecosystems:** Concept of an ecosystem. - Structure and function of an ecosystem; Producers, consumers and decomposers. - Energy flow in the ecosystem - Ecological succession. - Food chains, food webs and ecological pyramids; Introduction, types, characteristic features, structure and function of Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems.
UNIT-II (8 Hrs)	**Natural Resources: Natural resources and associated problems.** Forest resources: Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people. Water resources: Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems. Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources. Food resources: World food problems, changes caused by non-agriculture activities-effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity. Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources.

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	Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification; Role of an individual in conservation of natural resources; Equitable use of resources for sustainable lifestyles.
UNIT-III (8 Hrs)	**Biodiversity and its conservation:** Definition: genetic, species and ecosystem diversity-classification - Value of biodiversity: consumptive use, productive use, social-Biodiversity at national and local levels. India as a mega-diversity nation - Hot-sports of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts. - Endangered and endemic species of India – Conservation of biodiversity: conservation ofbiodiversity.
UNIT-IV (8 Hrs)	**Environmental Pollution:** Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies, Sustainable Life Studies. Impact of Fire Crackers on Men and his wellbeing. **Solid Waste Management:** Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.
UNIT-V (8 Hrs)	**Social Issues and the Environment:** Urban problems related to energy -Water conservation, rain water harvesting-Resettlement and rehabilitation of people; its problems and concerns. Sustainability: theory and practice, Environmental ethics: Issues and possible solutions. Environmental Protection Act -Air (Prevention and Control of Pollution) Act. – Water (Prevention and control of Pollution) Act -Wildlife Protection Act -Forest Conservation Act-Issues involved in enforcement of environmental legislation.-Public awareness.
UNIT-VI (8 Hrs)	**Environmental Management**: Impact Assessment and its significance various stages of EIA, preparation of EMP and EIS, Environmental audit. Ecotourism, Green Campus – Green business and Greenpolitics. Environmental dairy. **The student should Visit an Industry / Ecosystem and submit a report individually on any issues related to Environmental Studies course and make a power point presentation.**

Text Books:

1.	Environmental Studies, K. V. S. G. Murali Krishna, VGS Publishers,Vijayawada Rani; Pearson Education, Chennai
2.	Environmental Studies, R. Rajagopalan, 2nd Edition, 2011, Oxford UniversityPress.
3.	Environmental Studies, P. N. Palanisamy, P. Manikandan, A. Geetha, andK.Manjula

Reference Books:

1.	Text Book of Environmental Studies, Deeshita Dave & P. Udaya Bhaskar, CengageLearning.
2.	A Textbook of Environmental Studies, Shaashi Chawla, TMH, NewDelhi
3.	Environmental Studies, Benny Joseph, Tata McGraw Hill Co, NewDelhi
4.	Perspectives in Environment Studies, Anubha Kaushik, C P Kaushik, New AgeInternational Publishers,2014

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Course Code	Category	L	T	P	C	I.M	E.M	Exam
B20MC1202	MC	2	--	--	0	--	--	--

PROFESSIONAL ETHICS AND HUMAN VALUES

(Common to CSE, ECE & IT)

Course Objectives:

1	To create an awareness on Engineering Ethics and Human Values.
2	To instill Moral and Social Values and Loyalty.
3	To appreciate the rights of others.
4	To create awareness on assessment of safety and risk.

	Course Outcomes: At the end of the course students will be able to:	**K L**
1	Identify and analyze an ethical issue in the subject matter under investigation or in a relevant field. Demonstrate knowledge of ethical values in non-classroom activities, such as service learning, internships and field work.	K1&K2
2	Identifythemultipleethicalinterestsatstakeinareal-worldsituationorpractice and Articulatewhat makesaparticularcourseofactionethicallydefensible.	K1&K2
3	Assess their own ethical values and the social context of problems.	K3
4	Identify ethical concerns in research and intellectual contexts, including academic integrity,useandcitationofsources,theobjectivepresentationofdata,andthetreatment of humansubjects.	K3
5	Integrate, synthesize, and apply knowledge of ethical dilemmas and resolutions in academic settings, including focused and interdisciplinary research.	K4

SYLLABUS

UNIT-I (10 Hrs)	**Human Values:** Morals,ValuesandEthics-Integrity-WorkEthic-ServicelearningCivicVirtue Respect for others Living Peacefully Caring Sharing Honesty -Courage-Cooperation Commitment Empathy Self Confidence CharacterSpirituality.
UNIT-II (10 Hrs)	**Engineering Ethics:** Senses of 'Engineering Ethics-Variety of moral issued- Types of inquiry Moral dilemmas Moral autonomy- Kohlberg's theory- Gilligan's theory -Consensus and controversy Models of professional roles-Theories about right action-Self-interest - Customs and religion Uses of Ethical theories Valuing time Cooperation Commitment.
UNIT-III (8 Hrs)	**Engineering as Social Experimentation:** Engineering As SocialExperimentation- Framing the problem- Determiningthefacts codesofEthics- ClarifyingConcepts- Application issues Common Ground -General Principles- Utilitarian thinking respect forpersons.
UNIT-IV (10 Hrs)	**Engineers Responsibility for Safety and Risk:** Safety and risk Assessment of safety and risk. Risk benefit analysis and reducing risk-Safety and the Engineer-Designing for the safety- Intellectual Property rights(IPR).

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UNIT-V (10Hrs)	**Global Issues:** Globalization- Cross-culture issues-Environmental Ethics- Computer Ethics Computers as the instrument of Unethical behavior Computers as the object of Unethical acts Autonomous Computers-Computer codes of Ethics- Weapons Development -Ethics and Research Analyzing Ethical Problems in research.
Text Books:	
1.	"Engineering Ethics includes Human Values" by M.Govindarajan, S.Natarajan- and, V.S.Senthil Kumar-PHI Learning Pvt Ltd-2009.
2.	"Engineering Ethics" by Harris, Pritchard and Rabins, CENGAGE Learning, India Edition, 2009.
3.	"Ethics in Engineering" by Mike W. Martin and Roland Schinzinger-Tata McGraw-Hill-2003.
4.	"Professional Ethics and Morals" by Prof.A.R.Aryasri, DhanikotaSuyodhana-Maruthi Publications.
5.	"Professional Ethics and Human Values" by A.Alavudeen, R.Kalil Rahman and M.Jayakumaran-LaxmiPublications.
6.	"Professional Ethics and Human Values" by Prof.D.R.Kiran
7.	"Indian Culture, Values and Professional Ethics" by PSR Murthy- BS Publication.
8.	Professional Ethics by R.Subramaniam - Oxford publications, New Delhi.

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Course Code	Category	L	T	P	C	I.M	E.M	Exam
B20BS1102	BS	3	--	--	3	30	70	3 Hrs.

APPLIED PHYSICS

(Common to AIDS, CE, EEE & ME)

Course Objectives:

1.	**Impart** the knowledge in basic concepts of wave optics through thePhenomena of interference and diffraction, basic concepts and properties of dielectric and magnetic materials and semiconductors.
2.	**Familiarize** the student with modern technologies like lasers, optical fibers and ultrasonics with an understanding of the science behind.
3.	**Impart** the elementary concepts of nanomaterials and their significance in different engineering branches.

Course Outcomes: At the end of the course the student will be able to

S.No	Outcome	KL
1.	**Interpret** the behavior of light radiation in interference and diffraction Phenomena and their applications.	K3
2.	**Explain** the classification and properties of dielectric and magnetic materials suitable for engineering applications.	K3
3.	**Understand** the basics of modern optical technologies like lasers and optical fibers and their utility in various fields.	K3
4.	**Explain** the important aspects of semiconductors and electrical conductivity in them.	K3
5.	**Understand** the basics of technology of Ultrasonics in various fields and demonstrate the synthesis and applications of nanomaterials.	K3

SYLLABUS

UNIT-I (10 Hrs)	**WAVE OPTICS** **Interference:** Principle of super position. Interference of light, interference in thin films (reflected light) – Wedge film and Newton's rings – Applications **Diffraction:** Types of diffraction, Fraunhoffer diffraction at a single alit, Diffraction grating, grating spectrum. Missing order, Resolving power, Rayleigh's Criterion, Resolving power of Grating
UNIT-II (10 Hrs)	**DIELECTRICS AND MAGNETICS** **Dielectrics** : Introduction to dielectrics, Electric Polarization, Dielectric polarizability, Susceptibility, Dielectric constant, Types of Polarization, Frequency dependence of Polarization, Internal field in a dielectric, Claussius and Mosotti equation, Applications of dielectrics. **Magnetics**: Introduction to magnetics, Magnetic dipole moment , Magnetization, Magnetic susceptibility and Permeability, Origin of permanent magnetic moment, Classification of magnetic materials (Dia , Para, Ferro, Antiferro and ferri), Hysteresis – Weiss Domain theory – Ferrites, soft and hard magnetic materials, Magnetic device applications.

H. Nagaraju

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UNIT-III (10 Hrs)	**LASERS AND FIBER OPTICS** **Lasers**: Introduction, Interaction of radiation with matter, condition for light amplification, Einstein's relations. Requirements of lasers device Types of lasers, Design and working of Ruby and He – Ne lasers, Laser characteristics and applications. **Fiber Optics**: Introduction to optical fibers, Principle of light propagation in fiber, Acceptance angle, Numerical aperture, Modes of propagations, types of fibers, classification of fibers based on refractive index profile, applications of fibers with emphasis on fiber optic communication.
UNIT-IV (9 Hrs)	**SEMICONDUCTORS** Introduction, intrinsic semi conductors, density of charge carries, Fermi energy, Electrical conductivity – Extrinsic semi conductors – P-type and N-type, Density of charge carriers, dependence of Fermi energy on carrier concentration and temperature, direct and indirect band – gap semi conductors, Hall effect, Applications of Hall effect. Drift and diffusion currents, Continuity equation, applications of semi conductors.
UNIT-V (9 Hrs)	**ULTRASONICS AND NANOMATERIALS** **Ultrasonics:** Introduction, Production of Ultrasonics – Piezoelectric and Magnetostriction methods, detection of ultrasonics, acoustic grating - determination of wavelength and velocity of ultrasonics, applications of ultrasonics. **Nanomaterials:** Introduction, salient features of Nanomaterials, Synthesis methods – Ball milling, Condensation, Chemical Vapour Deposition and Sol – Gel methods, Characterization techniques for nano materials - The scanning tunneling microscopy (STM) and The atomic force microscopy (AFM), Carbon nanotubes (CNTS), Applications of Nano materials.

Text Books:

1.	A text Book of Engineering Physics – M.N. Avadhanulu and P.G.Kshirasagar.-S.Chand Publications 2017
2.	Engineering Physics by HK Malik and A.K.Singh. McGrawhill Publishing Company Ltd.
3.	Engineering Physics by V.Rajendran. McGrawhill Education (India)Pvt Ltd.

Reference Books:

1.	Introduction to Solid State Physics by Charles Kittel , Wiley Publications 2011
2.	Semiconductors Devices – Physics and Technology by S.M.Sze , Wiley Publications 2008
3.	Text book of Nano Science and Nano technology by TataMcGrawhill 2013.
4.	Optical fiber communications by Gerd Keiser, Tata McGraw hill 2008.

e-Resources:

1.	http://library.iiti.ac.in/
2.	https://onlinecourses.nptel.ac.in/

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